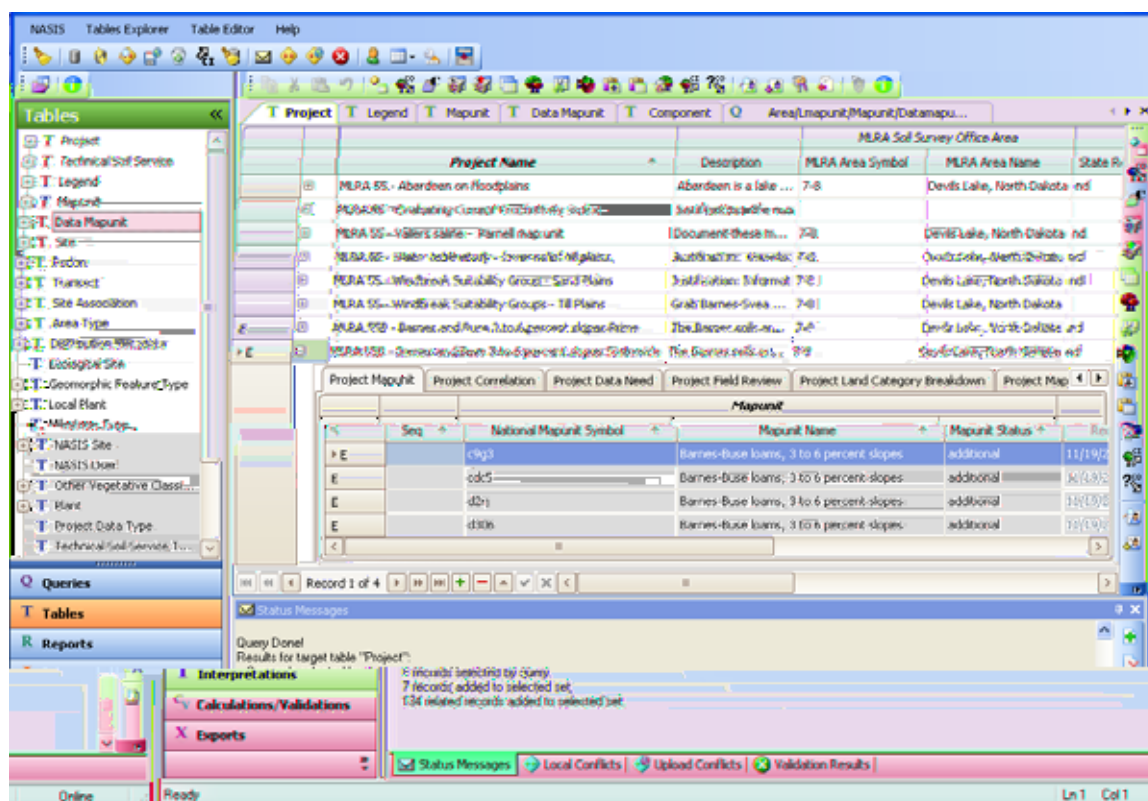


NASIS 6.0 User Guide

Version 6.0.1
December 1, 2009



NASIS User Guide

NASIS User Guide

Chapter 1 Understanding NASIS.....	1
What is NASIS?	1
Major Areas of NASIS	1
NASIS Capabilities.....	2
Essential NASIS Concepts	3
Objects, Ownership, and Record Locking	6
The Local Database	8
The Selected Set	9
Target Tables	10
Database Security.....	10
Export of NASIS Data in the SSURGO Format	14
Interpretations in NASIS	16
Site and Point Attributes in NASIS.....	18
Soil Survey Goals and Progress.....	18
NASIS 6 Design	19
Chapter 2: Working with NASIS Windows, Menus and Toolbars.....	1
The NASIS Window Environment.....	1
Learning the Parts of the NASIS Window	1
Opening Screen:	2
Explorer Panel.....	3
Editor Panel.....	4
Message Panel.....	6
NASIS Toolbar and Menu	8
Explorer Toolbars and Menus.....	9
Queries Explorer Toolbar and Menu	10
Tables Explorer Toolbar and Menu	11
Reports Explorer Toolbar and Menu	12
Interpretations Explorer Toolbar and Menu.....	13
Calculations/Validations Explorer Toolbar and Menu	14
Exports Explorer Toolbar and Menu	15
Editor Toolbar and Menus.....	16
Query Editor Toolbar and Menu	16
Table Editor Toolbar and Menu and Table Toolbar	17
Report Editor Toolbar and Menu	18
Interpretation Editor Toolbar and Menu	19
Calculation and Validation Editor Toolbar and Menu.....	20
Export Editor Toolbar and Menu	21
NASIS Help.....	22
Managing NASIS Toolbars	24
Chapter 3: Understanding NASIS Objects, Tables, and Elements	1
NASIS Data Structure	1
NASIS Aggregate Data	1
The Area Type Object	2
The Legend Object.....	5
The Mapunit Object.....	14
The Data Mapunit Object	17
Summary:.....	20
Chapter 4: Building the Selected Set	1
Client-Server Application	1
Queries Explorer	3
Selected Set Process Steps.....	4
National queries	12
Area/Lmapunit/Mapunit/Datamapunit by Office Group	12
Area/Lmapunit/Mapunit/Component by Area name, Compname	13
Area/Lmapunit/Mapunit/DMU by Area Symbol	14
Area/Lmapunit/Mapunit/ Major Comp and Hydric Comp	15

NASIS User Guide

Area/Lmapunit/Mapunit/DMU by Areasym, Mapunit Name	16
Chapter 5: Understanding Table Layout	1
Bands and Columns.....	1
Hiding the Explorer Panel	2
Right Click Menu	3
Filtering and Sorting columns.....	3
Sorting Columns.....	4
Resizing Columns	6
Hide Columns.....	8
Moving Bands.....	11
Freeze columns.....	11
Navigating through child tables.....	12
Examining a Table Layout	14
Saving a Table Layout.....	14
Selecting a Table Layout.....	15
Restoring the default edit setup.....	16
Modifying a Table Layout	17
Analysis tools	18
Group By Columns	18
Group by Box.....	19
Filtering.....	20
Chapter 6: Overview of Editing Concepts	1
Editing Concepts.....	1
Copy, Cut and Paste Data	7
Copy Selected Row or Selected Tree	8
Paste Rows/Trees	9
Using Find/Replace	13
Discard All Changes.....	16
Using Global Paste.....	17
Lesson Summary	20
Chapter 7: Examining Area, Legend, Mapunit, and Data Mapunit Objects.....	1
Examining the Area Tables.....	1
Examining the Legend Tables	4
Examining the Mapunit Table	8
Examining the Data Mapunit Object	15
Summary:.....	18
Chapter 8: Examining the Project Object	1
Traditional Soil Survey Projects	2
Chapter 9: Examining the Point Data Objects.....	1
Loading Existing Site and Pedon Records	1
Examining the Site Tables	4
Examining the Link between Sites and Mapunits.....	7
Examining the Pedon Tables	8
Examining the Link between Pedons and Components	10
Examining the Transect tables.....	12
Examining the Site Association tables.....	14
Process Steps for entering Point data	15
Chapter 10: Pedon Import	1
Chapter 11: Examining Other NASIS Tables	1
Examining Management, Mapunit and Point Tables	1
Examining Restricted Tables	2
Examining the Distribution Metadata Tables	2
Examining the Ecological Site Tables.....	2
Examining the Geomorphic Feature Type Tables	5
Examining the Plants Table	6
Examining the Other Vegetative Classes Tables	9

NASIS User Guide

Examining the “Type” Tables	10
Chapter 12: Examining Calculations and Validations.....	1
Examining Calculations.....	1
Running Calculations	4
Examining Validations.....	7
Running Validations	9
Summary:.....	10
Chapter 13: Managing Soil Survey Data	1
Creating a New Map Unit.....	1
Step 1 – Create a new Data Mapunit	1
Step 2 – Populate the Data mapunit	2
Step 3 – Open and populate the DMU child tables	2
Step 4 – Open and populate the Component child tables	3
Step 5 – Create the Mapunit	3
Step 6 – Link the Mapunit and Datamapunit.....	4
Step 7 – Document the Mapunit.....	5
Step 8 – Linking the Mapunit to the Legend.....	5
Combining Existing Mapunits.....	8
Step 1 – Create a new Data Mapunit	8
Step 2 – Copy existing components into New Data Mapunit	9
Step 3 – Create a New Mapunit	10
Step 4 – Link the Old Mapunits to the New Mapunit.....	10
Step 5 – Link the New Data Mapunit to the New Mapunit	11
Step 6 – Document the Mapunit.....	12
Step 7 – Link the new Mapunit to the Legend.....	13
Step 8 – Certification	14
Step 9 – Modify the Mapunit Status	15
Splitting Map Units	16
Step 1 – Create new Data Mapunits	16
Step 2 – Populate the Correlation Table	17
Step 3 – Document the Mapunit.....	17
Step 4 – Create the new Mapunits.....	17
Step 5 – Copy the Provisional Mapunits	18
Step 6 – Link the New Provisional Mapunits into the Legend.....	20
Step 7 – Certification of DMU and Legend.....	20
Step 8 – Modify the Mapunit Status	21
Chapter 14: Project Management.....	1
Populate the Local Database with MLRA data	2
Scenario 1 – Water Table Study	5
Step 1 – Create the Project.....	5
Step 2 – Identify Map Unit(s).....	7
Step 3 – Populate the remaining child tables.....	10
Scenario 2: Creating a new MLRA map unit and correlate it to existing survey map units	18
Creating the MLRA Map Unit and Data Mapunit.....	24
Create a new Datamapunit for the MLRA map unit and link the map unit and DMU.....	27
Linking the new MLRA map unit to the survey legends.....	31
Other important steps include:	36
Chapter 15: Queries Explorer.....	1
Query Editor Panel.....	2
Using the Right-Click menu.....	4
Using the Explorer Toolbar Icon or the Editor Toolbar Icon.....	4
Chapter 16: Reports Explorer.....	1
Printing Reports	2
Building a Complete Selected Set.....	2
Printing a “txt” Report	4
Printing a “html” Report	7

NASIS User Guide

Chapter 17: Exports Explorer	1
Overview of Exports.....	1
Selecting Records for the SSURGO Format.....	1
Running Validations	3
Open Exports Explorer and Select Criteria	5
Select/View Interpretations.....	8
Select/View Text.....	9
Run Export.....	9
When an Export is Run	10
Locating the NASIS Export File	11
NASIS SSURGO Export Errors	12
Distribution Metadata	12
Loading distribution metadata	13
Chapter 18: NASIS Query Writing	1
SQL	1
SQL Syntax.....	1
Keywords.....	1
Identifiers.....	2
Operators or Functions.....	2
NASIS SQL	3
Data types and comparison operators.....	9
Exercises.....	10
Advanced Queries	11
Target Tables	12
Subqueries	18
EXISTS.....	18
NOT EXISTS	18
ANY operator.....	19
IN operator.....	19
Chapter 19: Introducing Interpretations	1
Developing Interpretive Statements.....	1
Exploring the meaning of Limiting Features in the context of a Land Use.....	1
The Limitation of Using “Crisp Limits”	2
Introducing Fuzzy Logic.....	3
Understanding fuzzy math concepts	4
Converting the Fuzzy Result to Rating Classes (Defuzzifying).....	7
Lesson Summary	8
Chapter 20: Reporting Interpretations	1
Understanding the Interpretation Reports.....	1
Examining Reporting Options	3
Examining Report Writing	10
Chapter 21: Developing Interpretation Criteria.....	1
Overview of Interpretation Criteria	1
Three Component Concept of an Interpretation.....	2
Properties.....	3
Testing Properties	4
Where Used “Properties”	5
Evaluations.....	6
Evaluation Types	10
Testing Evaluations	18
Using Multiple Values.....	19
Where Used “Evaluations”	20
NASIS interpretations	21
Rule Editor Symbols.....	22
Sub Rules	25
Operators.....	27

NASIS User Guide

Hedges	28
Rating Classes	34
Naming Convention:.....	37
Documentation:	37
Testing Interpretations.....	38
Where Used "Rules".....	39
Ownership of interpretations, rules, evaluations, and properties.....	40
Summary.....	40
Chapter 22: Technical Soil Services Reporting.....	1
Populate the Local Database with TSS data	1
Technical Soil Service Area Overlap	4
Technical Soil Service Area Query	4

Chapter 1 Understanding NASIS

What is NASIS?

The National Soil Information System (NASIS) is a specialized tool for managing soil survey data throughout all stages of soil survey from collection of data to publication of information. It is adaptable to future changes in soil survey procedures and standards, and allows users to create reports and interpretations. Sections address site-specific information such as plant or soil profile descriptions as well as map unit attributes. Spatial data and soil characterization data are maintained in other databases.

Major Areas of NASIS

NASIS is envisioned to encompass the four major areas of soil survey plus operations and maintenance. Soil survey operations comprise an interaction of spatial data, map unit attributes, point or site attributes, and concept or aggregation criteria. NASIS includes objects and tables for database management, map unit attributes, and site and point attributes.

Project management

NASIS manages map units through the use of soil survey projects. This new object is designed to develop and manage map units without affecting the official soil survey legends published to the Soil Data Mart.

Map unit attributes

NASIS allows entry and maintenance of map unit data.

Point and site attributes

NASIS incorporates site, pedon, transect, and site association objects, each with several tables for management of point and site attributes. Lessons in Chapters 9 and 10 focus specifically on the site and point attributes.

Concept and aggregation criteria

Long term plans include incorporation of principles and rules of soil survey operation into NASIS. Currently, tools within NASIS support application of principles and rules by soil survey personnel, though they are not the concept and aggregation criteria envisioned for later releases of NASIS. Existing tools provide calculated data elements, data validation, stored interpretations, interpretation generation capability, and choice lists for consistent selections.

Spatial data

Long term plans include the integration of spatial data to the NASIS database. Spatial data include points, lines, and polygons on maps.

NASIS Capabilities

The NASIS software provides tools and functionality for managing and editing data, querying the NASIS database, generating reports, creating soil interpretations, and exporting data.

With NASIS, data elements can be calculated, such as taxonomic classifications. NASIS also validates the completeness and integrity of the data. Underlying it all, NASIS provides functionality for managing the ownership and security of data. A full-featured online help system offering keyword and full text search capabilities, hypertext links, navigation tools, print capabilities, and more than four thousand help topics is available. As new objects, tables, or even major areas are added to NASIS, the online help system is expanded. The online help system fully integrates with the NASIS software and includes context-sensitive help for each table, column, and dialog box in NASIS.

Management of soil survey data

NASIS is used to create seamless soil surveys. Map units are correlated in ongoing surveys and map units between survey areas. Soil interpretations are generated and documented. The soil interpretation results are based on calculations performed within NASIS. Custom soil interpretations can be created using local interpretation criteria. Soil scientists use NASIS to generate standard soils reports and create specialized reports for manuscript publication. NASIS provides the capability of exporting data into the Soil Survey Geographic (SSURGO) format, and to the Staging Server where tabular datasets are joined with the corresponding spatial data for archiving in the Soil Data Warehouse..

Table 1-1 lists the principal features of the NASIS software.

NASIS Software Features

Centralized database and server for data sharing	Ability to select records from multiple tables in a single process
Specialized queries for finding specific information in the database	Report manager for developing reports
Find function for searching columns and tables	Query editor for developing custom queries
Choice lists for data selection	Fully customizable data table editors with filtering capability and the ability to save a table layout for later reuse.
Access choice list descriptions	Reports and online help topics displayed in a browser to provide linking and printing capability
Cut, copy, and paste editing tools	Ability to calculate data elements
Global editing functions	Data validations for checking completeness and integrity of data
Referential integrity	Ability to export NASIS data in an ASCII pipe delimited format
Context-sensitive help on fields and tables	
A fully-integrated online help system of linked topics and robust search capabilities	

Table 1-1. NASIS Software Features

NASIS User Guide

Some NASIS capabilities are specific to one of the major areas of NASIS. The NASIS map unit attributes management capabilities are shown in Table 1-2.

NASIS Map Unit Attributes Management Capabilities

Export NASIS tabular data into SSURGO format	Produce standard soils reports
Export tabular data to the Staging Server	Create specialized reports for manuscript publication
Join map units between survey areas to create seamless soil surveys	Generate soil interpretations
Create and edit legends, map units, and map unit data	Create custom interpretation criteria
Correlate map units in an ongoing survey	Manage soil survey projects and related progress data
Maintain complete correlation records for a survey area	Maintain soil survey schedule data
Maintain multiple map unit legends	

Table 1-2. NASIS Map Unit Attributes Management Capabilities

NASIS capabilities for managing site and point attributes are listed in Table 1-3.

NASIS Site and Point Attributes Management Capabilities

Enter site descriptions for multiple site usages	Link pedon data to component data
Define overlaps between sites and map units	Accept point or spatial representations of sites
Define overlaps between sites and areas	Associate transect stops with a pedon
Enter pedon description data	Associate multiple transect stops within a Transect
Record other observation data	

Table 1-3. NASIS Site and Point Attributes Management Capabilities

Essential NASIS Concepts

- The survey area name is separated from the legend so that a survey area may have multiple legends.
- The survey area legend is separated from its' map units so that a map unit may be linked to multiple legends. This allows for separate ownership of map unit records from that of the legend record.
- The legend and its map units are linked through the Legend Mapunit table.
- Soil survey progress is tracked by Project and each Project is associated with a group of map units.
- Projects and map units are linked through a Project Mapunit table.
- Technical soil service activities are recorded in the Technical Soil Services table.
- The coincidence between soil survey areas and other area types can be recorded.

NASIS User Guide

- Areas are organized by area type.
- The soil properties, qualities and interpretations for map units are located in the Data Mapunit object.
- Map units and Data Mapunits are linked via the Correlation table.
- Map units can have an unlimited number of components, and components can have an unlimited number of horizons.
- Annual flooding and ponding events are recorded in the Component Month table. Frequency is assigned to those months in which the annual event most commonly occurs.
- Water tables are recorded as soil moisture state “wet” in the soil moisture table.
- Data elements with multiple entries have their own table. For example, unified classification has its own table since it can have more than one class.
- Information about inactive map unit symbols (called “additional” symbols in NASIS) is retained in the database.
- Inclusions are “other components” in NASIS (i.e., not major components).
- Horizon nomenclature can be assigned to layers.
- Representative values (RVs) and high and low values are available for some data.
- Interpretations are generated from the actual data assigned to the soil component.
- Interpretations can deal with interactions, such as the interaction of slope and water table where, as slope increases, the limitations associated with water table decrease.
- Interpretations can deal with relative weights, such as when depth to bedrock may have more importance to the interpretation than slope.
- Interpretation results provide a complete gradation on the truthfulness (or falseness) of an interpretive statement.
- The interpretation logic is used to translate ranges of properties into a uniform basis.
- NASIS can handle any number of rating classes.
- NASIS interpretive results are always up-to-date between the data and criteria because an interpretive result is a function of running the soil property data through criteria.
- Interpretive results can not be edited (no overrides). Instead, the physical and chemical soil properties or the criteria itself must be reviewed.
- Database security is accomplished through a concept called “owned objects” and the use of record locking and column protection.
- The role of the dataset manager is managing the assignment of users to groups. In NASIS, data is owned by a group, and users who are members of that group have authority to make changes to the data on behalf of the group.

NASIS Communications

The National Soil Information System is required for everyone to have access to nationally complete and up-to-date soils data at any time, from any location, and guarantees the integrity and security of those data. NASIS communications refers to the software design, telecommunications, and network connectivity required to run NASIS at any location.

NASIS central database

The NASIS central database is a computer server that stores all the soil survey tabular attribute data using SQL Server database software. The central database is the repository for all transactional data making it available for viewing and editing.

NASIS client or local database

NASIS 6.0 implements the concept of a client or local database. A client version of the NASIS software runs on the user's local computer. A portion of the national database is selected and copied to the client computer for editing and management. An upload process is utilized to move edited or new data from the client to the central database.

The NASIS Sites

NASIS Sites exist to provide logical groupings of data for ownership.

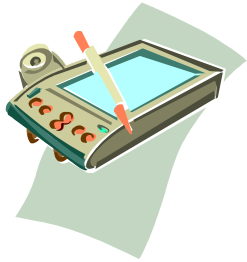
Creating and editing soil data

Soil data are created, edited, and saved to the NASIS local database, and then saved to the national database. Users must belong to a group to create, edit, or delete NASIS data. When a soil scientist loads data for a soil survey area in NASIS, data are retrieved from the national database and placed in the local database. Data is loaded into the selected set from the local database. Data can then be edited in the Selected Set. Edits are then saved to the central database using an upload process.

Running NASIS at a soil survey office

NASIS users connect to the central server to run NASIS using internet connections. Client computers can be disconnected from the network for a limited time and still run NASIS. When reconnected to the network the local database is then synchronized with the central server.

Figure 1-1 depicts connections to the central server from the MLRA Soil Survey Offices (SSO), MLRA Regional Offices (MO), and other locations to NASIS Central Server at Kansas City (KC).



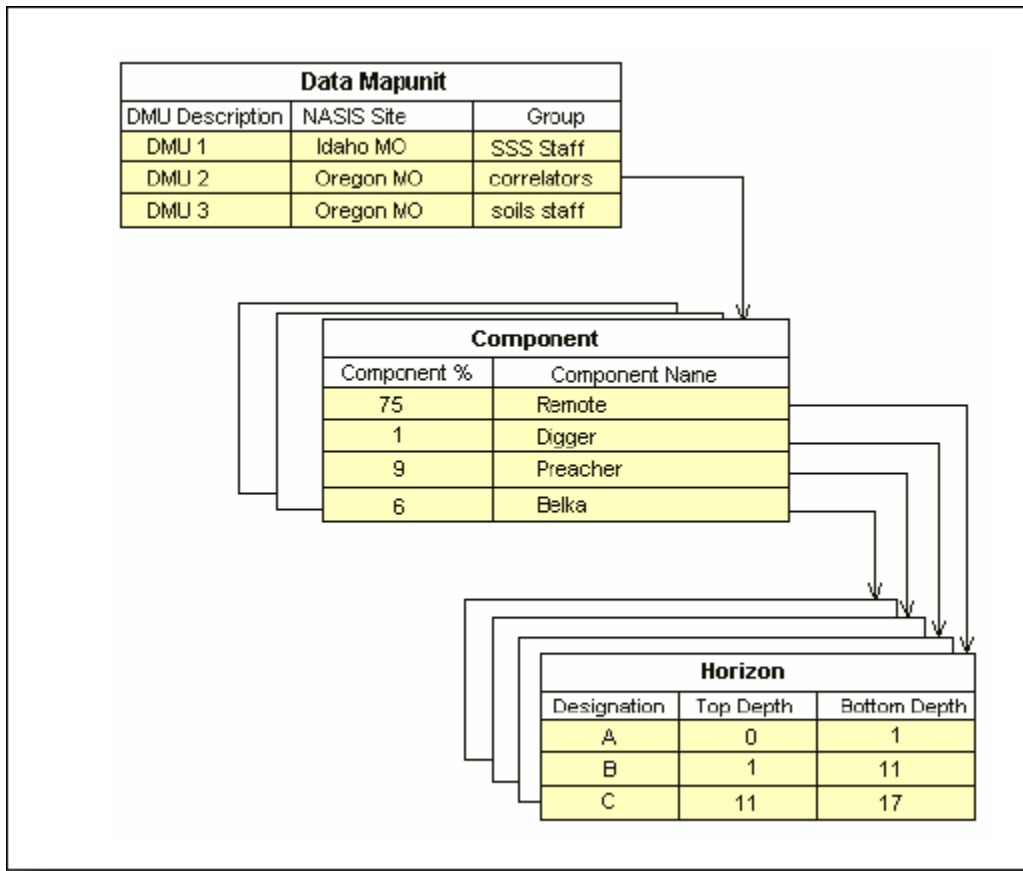


Figure 1-2. Object Ownership

What does it mean to own an object?

In NASIS, authorized users must be explicitly identified and assigned to particular groups. Data is owned by different groups, and group members have the authority to make changes to the data on behalf of the group. NASIS users may only edit objects owned by a group to which they belong. Users need no authority to *copy* an object because copying does not change the original data. The copied object is then owned by the group whose group member performed the copy and can then be edited by any member of that group.

The tasks of managing users and groups are handled by the NASIS dataset manager who has the authority to edit the NASIS Site tables.

Multi-user System

Since NASIS is a multi-user system, provisions must be made to prevent two users from editing the same record at the same time. In NASIS version 1.0 through 5.4 this was handled by locking records. Locks were placed on a record by the first user that brought the record into their selected set for viewing or editing.

With the NASIS 6.0 release, this process is changed. In NASIS 6.0 multiple users can download copies of the same data records from the central server to their local database. Data stored in the local database is in a “read-only” mode. Data to be edited must be loaded into the selected set by executing a query or the Load Related function

against the local database. The selected data is then “checked-out” from the central server. At the time of “check-out”, a lock is placed at the central server allowing the user to edit the specific data. When editing is completed, the data is “checked-in” to the central server and the edit lock is removed. A complete discussion of this process is in Chapter 6.

Row status indicates permission, identifying whether the user has permissions to edit a particular data record. Row status is indicated by a letter to the left of the first column in any table. Users can only edit a record if they belong to the group that owns the record and “check out” the record from the national database. If data is “checked out” there will be a status of “E” (editable). If data is checked out by another user, the status will be “L” (locked). Any user can view records owned by other groups, but they cannot edit them. They will have a status of ‘P’, (protected).

The Local Database

In NASIS, the group of records selected from the central server and downloaded to the NASIS user’s computer is called the local database.

How the local database is created or changed

The local database is populated by selecting data objects from the central server using a combination of queries and choice lists. These rules govern the local database:

- When NASIS 6.0 is first installed the local database will be empty of soil survey data.
- All records from a number of data objects used as lookup tables are automatically downloaded to the local database. These include the area type, NASIS sites (database), geomorphic feature type, plant, ecological site, local plant, query, report, property, evaluation, rule, project data type, technical soil service type, milestone type, and edit setup objects.
- Additional data object records can be added to the local database by running one or more queries on the national database.
- When a particular data object is selected for download from the national database, all associated records in other tables and objects are also downloaded. For example, if a legend is selected, all map units linked to that legend, all data mapunits linked to the map units, and all linked pedons and sites will be downloaded.
- The local database can be cleared using the “Clear Local Database” menu option or toolbar icon.
- New data records are added by entering them through the edit table grid.
- Edits to existing records of soil data are saved to the local database when the cursor is moved to another row of data in the selected set.
- Edits are copied from the local database to the national database by an upload and check in process that can be accessed from the menu or toolbar.

A more detailed description of working with the local database is provided in succeeding chapters.

The Selected Set

In NASIS, the “selected set” is the group of records selected from the local database for viewing in the editor panel or in reports. Some or the entire local database can be loaded into the users “selected set”.

How the selected set is created or changed

The selected set is built using a query or a combination of queries run against the local database or include records loaded using the Load Related function. These rules govern the selected set:

- When NASIS is first started, the selected set is empty. After built, the selected set is retained when NASIS is closed and restarted.
- Rows of the NASIS Site table and some lookup tables are exceptions and can be viewed upon opening NASIS.
- A selected set is emptied when the Clear Selected Set is chosen from the NASIS menu or the icon on the NASIS toolbar is chosen.
- Records are loaded into the selected set by running a query, or by using the Load Related function. (Related records must be in the local database).
- Multiple queries run against the local database are cumulative; that is, the newly selected records are appended to the selected set. Multiple Load Related actions are also cumulative.
- The command “Remove Selected Rows from Selected Set” removes one or more highlighted records and associated child records from the selected set, but does not delete the rows from the database.
- New records are added by inserting rows of data.
- When a row is marked for deletion it stays in the selected set and the deletion mark can later be removed. When the local database is uploaded and checked-in to the central database, records marked for deletion are permanently deleted.

Why NASIS users need to know the contents of the selected set

Some of the actions performed on data affect the entire selected set and some affect only individual objects or rows. It is important to know what is in the selected set, because reports are based on the whole selected set. Only part of the selected set will be visible at any point during the edit session. For example, the query used to select data for the edit session may load only those data mapunits with a description of “015AcB.” Because data mapunit is a root object, when it is loaded, all of its associated components and horizons data are loaded even though they do not appear until those tables are opened.

Multiple users sharing a single computer

Multiple users sharing a single computer must realize there is only one local database per computer. The local database must contain the information needed by all users. Data checked out by one user must be checked in at the end of the user session in order to be available for editing by other users.

Target Tables

Target tables are used when querying data. Understanding the concept of target tables—what they are and how to use them—is fundamental to selecting and editing records.

What is a target table?

Simply put, the target table focuses the outcome of a particular query. The user can control the query so that it loads only the specific data the user wants to work on during an edit session. The target table can greatly restrict or expand the number of records returned by a particular query. To understand target tables, the user must understand the relationship between objects in the NASIS database (see “Objects, Ownership, and Record Locking,” page 1.7, as well as the *NASIS Technical Data Model Diagrams* and the *NASIS Database Structure* diagrams available through the NASIS home page or online help).

How target tables restrict the records returned by a query

In an edit session, the user wants to limit work to only those components that are ‘series’. The user chooses a query that loads components by *kind* and specifies *series* as the kind. Because a component is a child table of the data mapunit object, the user could select either Component or Data Mapunit as the target table. *Whether or not the query restricts the selected set to only the series depends on the choice of target table.*

- If the Component is selected as the target table, then only components that are series are loaded.
- If the Data Mapunit is selected as the target table, then all data mapunits that have at least one component that is a series is loaded; in addition, all other components in each of those data mapunits is loaded.

Only one table within an object is selected as a Target Table. NASIS does not allow the selection of more than one table in a single object.

Selecting records from different objects

Some queries are designed to select records from different database objects, for example, from the mapunit object and from the data mapunit object. In these cases, the query is run with multiple target tables specified.

Database Security

The ultimate goal of NASIS security is to maintain the integrity of data. NASIS security is based on a concept called “owned objects” (page 1.7).

The task of adding users is handled by the NSSC Hotline in Lincoln.

The task of managing user groups is handled by a NASIS dataset manager who has the authority to edit the NASIS Site tables. The dataset manager assigns users to groups. Unless a user is assigned to a group, the user will not have authority to edit or create soil data. Once assigned to a group, a user may only edit data that is owned by a group to which the user is assigned. An individual user may belong to any number of groups as needed. One group is designated as their ‘default’ group. Any data object records created will be owned by the user’s default group. The NASIS Security Diagram is shown in Figure 1-3.

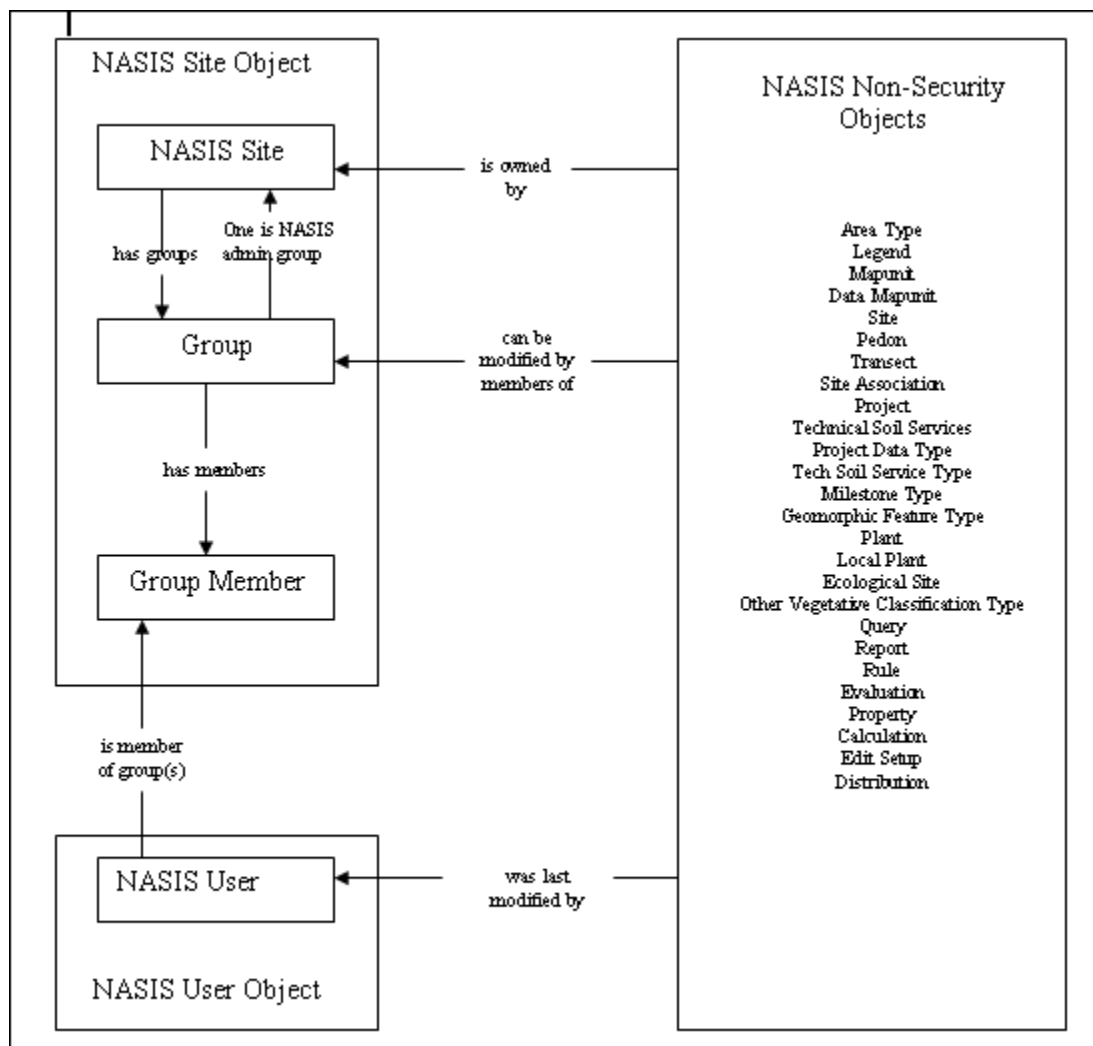


Figure 1-3. NASIS Security Diagram

The above graphic shows the relationship between the NASIS Site Object and the other owned objects. NASIS objects are owned by groups. Users are not required to belong to any group. However, a user cannot edit anything in an object unless the user belongs to a group with edit privileges for that object. Items within an object are owned by the creating group.

Certain objects, such as the Geomorphic Feature Type, Plant, and Calculation objects, contain data that are used by NASIS, but which are copied from other databases or maintained by a limited group of personnel. Most users can view these data, but cannot modify or add to the data.

Soil Survey Areas and Map Units

In NASIS, the soil survey area is separated into two parts: the *area* and the *legend*. The area includes the soil survey area name and total acres for the soil survey area. The legend includes the legend description (for example, detailed soil map legend), survey status, and correlation date. Legends are linked to survey areas, allowing multiple legends to be recorded for each soil survey area. Because there are several kinds of areas in NASIS, areas are organized by *area type* (explained in Chapter 6).

Multiple Legends, Coordinated Legends, and Joining Soil Survey Areas

In NASIS, a single survey area may have multiple legends. These legends could include a previous out-of-date legend and the current updated legend. In addition to multiple legends, a map unit may also be identified by symbols from different legends. These symbols could include a symbol from the soil survey area legend or a symbol from the state-wide legend. Each of these symbols can be different yet fully coordinated in NASIS. In effect, the map unit can have many aliases, all sharing the exact same data (or data mapunit). This capability is especially useful when joining between survey areas where two map units join exactly at the survey boundary and are identified by different symbols that are aliases for each other.

See Figure 1-5 below for an example of the joining of map units. MLRA Soil Survey Area map symbol 247, Soil Survey Area A map symbol Ha, and Soil Survey Area B map symbol 12 are all linked to national map unit 2h9a which is linked to data mapunit 1234. All symbols share the same mapunit data. The join between Soil Survey Area A and Soil Survey Area B is a perfect join.

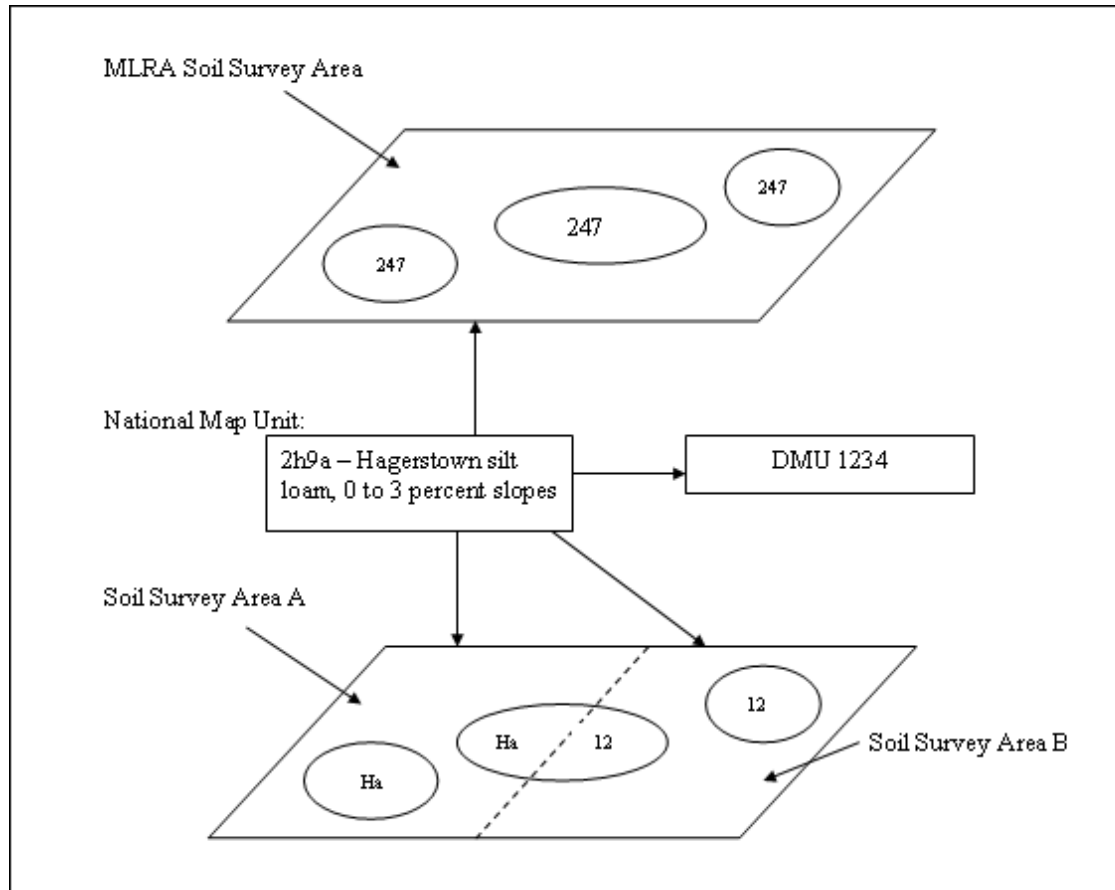


Figure 1-5. Coordinated Legends and the Joining of Soil Survey Areas

Legend and Mapunit Area Overlap

NASIS stores information about many kinds of areas including soil survey areas. These areas include MLRAs, states, counties, climate factor areas, and rainfall factor areas which are used to construct an “overlap” (or coincidence) with soil survey area legends and map units.

The example in Figure 1-6 shows that the Mariposa and Bell Counties Detailed Soil Map Legend is a two-county soil survey area. The legend is “overlapped” with the Bell County area to produce the Bell County Legend Overlap. This overlap records both the extent of the soil survey area in Bell County and the map units that occur in Bell County.

Other overlaps could be created for MLRAs, climate factor areas, and rainfall factor areas.

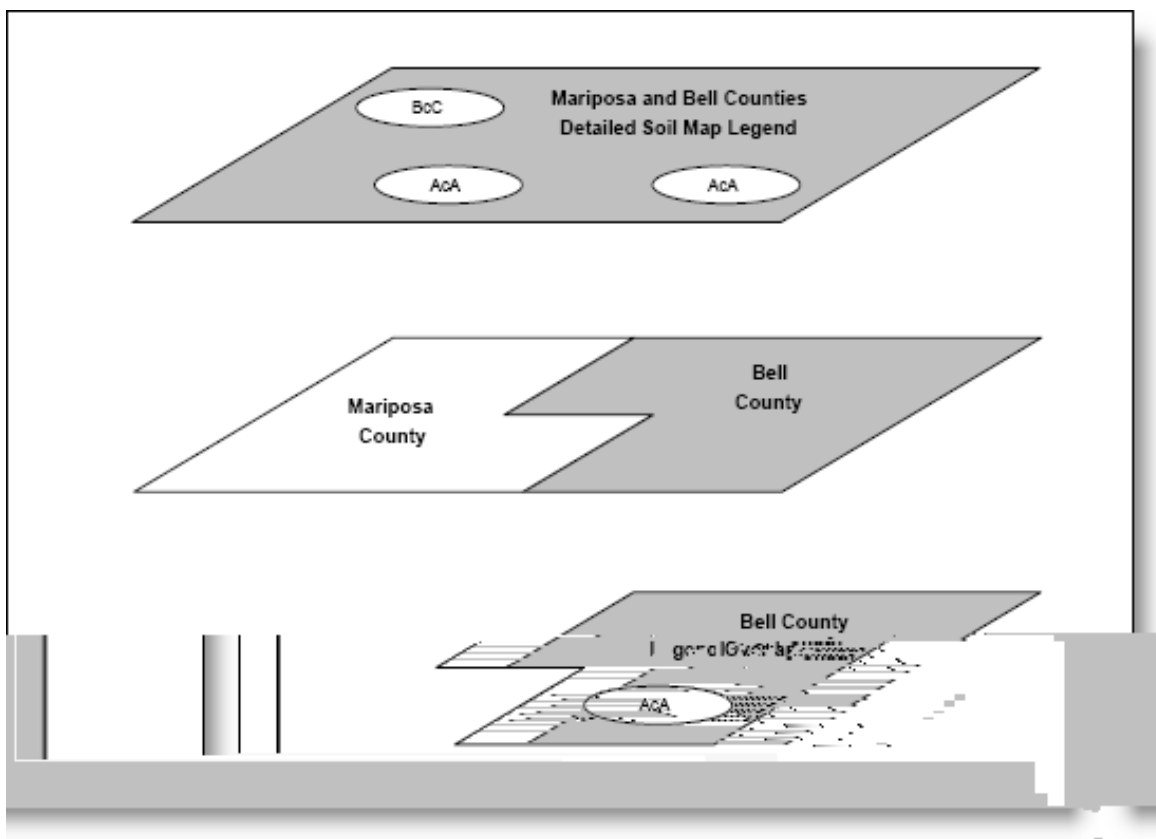


Figure 1-6. Legend and Mapunit Area Overlap

Export of NASIS Data in the SSURGO Format

NASIS provides the capability of exporting NASIS data in the SSURGO Version 2 format. Exported data is distributed in an ASCII pipe-delimited format. It can be used with common software packages such as Microsoft Access.

NASIS User Guide

National as well as state specific database templates are available at <http://soildatamart.nrcs.usda.gov/Templates.aspx> for converting the export file into a Microsoft Access database. The templates also contain some standard queries and reports.

The SSURGO Export selects data by legend. An export can contain data for one or more legends. Although the number of legends is not limited by the program, it is best suited to exporting a limited number (one to three), because the export process is resource intensive. The selected legend(s) are loaded into the selected set in NASIS prior to export. The map units, data mapunits, and components included in the export can be selected in two ways.

Using standard criteria to identify data for export

Once the legends have been loaded into the selected set, associated map units, data mapunits, and components can be selected through a dialog without loading them into the selected set.

Map units in the local database tables are selected by status (provisional, approved, correlated, or additional). Any or all of the status types can be selected. When additional map units are selected, the user can choose between exporting the representative data mapunit for the map unit or the one for the additional map unit.

Note: When exporting data to the Staging Server for an official SSURGO export, additional map units are not exported. The capability to export additional map units exists so the users can export and review ongoing project data.

Data mapunits in the local database tables are selected by certification status (not for distribution, not certified, partly certified, or certified). Any or all of the certification status types can be selected (including data mapunits not assigned a certification status).

Components in the local database tables are selected by all components, major components, or by percent of composition.

Users can choose text kinds to be included in an export. Text kinds associated with any export data can be included.

Using the selected set to identify data for export

When the selected set is used, the map units, data mapunits, and components as well as the legend are loaded into the selected set. When the selected set is complete, the dialog in the NASIS export is marked to use the selected set rather than the above criteria.

(When the selected set is used, all rows in the tables are included regardless of their status. The export process does not check row status.)

Run interpretations on selected data

The export process provides the option of running interpretations on the data being exported. After criteria or selected set options are marked, the "Select/View Interps" tab can be selected from the export editor. National or local interpretations can be applied to the export data. Interpretation results are added to the export file.

Tracking SSURGO exports in the distribution metadata object

The export writes information about the selection criteria used and the data exported into permanent tables in NASIS. The permanent tables provide an export history and reference for subsequent exports.

Interpretations in NASIS

How NASIS generates interpretations

With NASIS, data in the component and horizon tables are filtered through national or local interpretive criteria stored in NASIS. In this way, new interpretations are generated based on current data and on calculations automatically performed by NASIS.

Advantages of NASIS interpretation criteria

- Interpretations are based on *actual* properties of the component.
- Interpretations can deal with interactions, such as the interaction of slope and water table where, as slope increases, the limitations of the water table decrease.
- Interpretations can deal with relative weights, such as when slope may have more importance to the interpretation than depth to water table.
- Users can get a complete gradation of how true (or false) an interpretive statement is. Fuzzy logic can be used to avoid bounding conditions where interpretive results change dramatically with only a minor change in soil properties.
- Users are not constrained by crisp rating classes such as slight, moderate, and severe. NASIS can handle any number of rating classes.
- Interpretive results are always up-to-date with the data and criteria. If the data or the criteria change, the result can change.
- If the interpretive result is incorrect users edit either the physical and chemical soil properties or the criteria itself. This allows NASIS to automatically document the interpretive result.
- Users can create local or regional interpretations based on local criteria.
- Users convert their property (data element) values to fuzzy numbers with a graphing tool called the Evaluation editor.
- The NASIS interpretation report gives users the ability to easily identify data voids (null or missing data).

Summary of interpretive criteria

Properties, evaluations, subrules, and rules are the basic Interpretation elements that work together to form the interpretive criteria.

Properties are SQL statements that retrieve data from the database,

Evaluations take the data resulting from the Property and evaluate according to the criteria's truth or membership function, and used in interpretations to make statements about the property's effect on the specific interpretative application.

Subrules are used to identify the restriction value and assign the property restrictions class.

Rules are used to group and manipulate the subrules to provide a final interpretive rating value and to assign a rating class.

Figure 1-7 is intended to provide a high level view of interpretive criteria. It is not the process flow used when creating interpretive criteria.

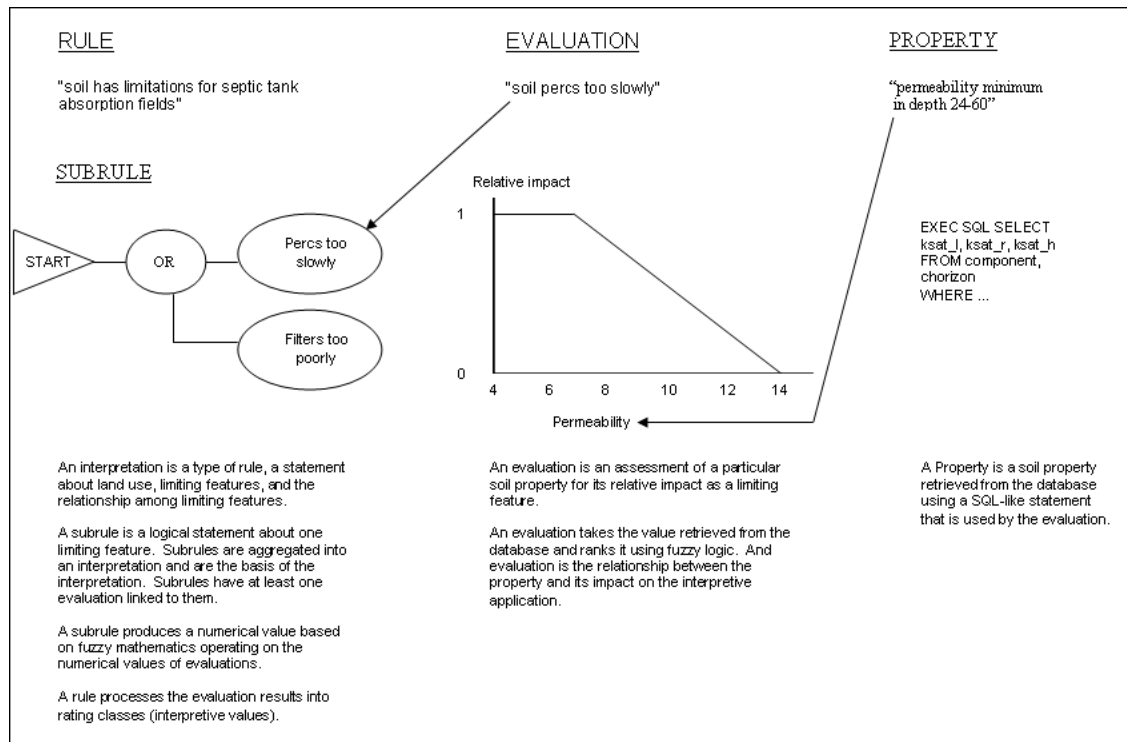


Figure 1-7. A Graphical View of Interpretive Criteria

For simplicity, Figure 1-7 shows an evaluation for percolation only.

Starting on the right of the diagram, the **Property** being evaluated is minimum saturated hydraulic conductivity values for horizons in a depth of 24-60" (60-150cm). This value is retrieved from the database using a query-like statement (Property).

To **Evaluate** percolation, the user must decide at what value a soil percolates *definitely too slowly* (e.g. if it percolates at less than 0.6 inches per hour or 4 micrometers/second).

To complete the **Evaluation**, the user must decide at what value the soil percolates *definitely not too slowly* (e.g. if it percolates at more than 2.0 inches per hour or 14 micrometers/second). Thus, for any given soil, the user can assess (*evaluate*) the relative truthfulness of the statement "soil percolates too slowly."

Finally, on the left of the diagram, the **subrules** focus on one limiting feature and must be linked to at least one evaluation. **Subrules** say nothing about the land use; therefore, the user can use them in different interpretations. **Subrules** are aggregated into an interpretation and considered the basis, or building blocks, of an interpretation.

Subsequent chapters discuss understanding, reporting and developing interpretive criteria in detail.

Figure 1-8 below is an illustration summarizing the relationship between rules (including subrules), evaluations, and properties. Using an interpretation for septic tank absorption fields the interpretation will identify if a soil has limitations for septic tank absorption fields if the soil percolates too slowly or filters too poorly.

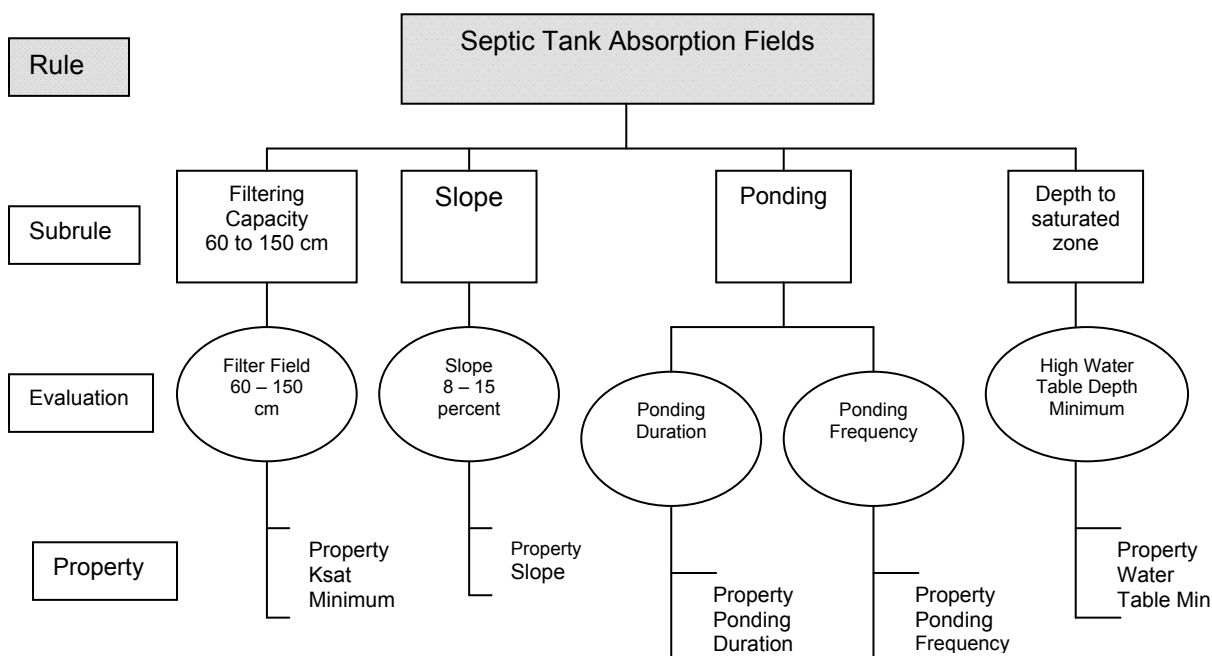


Figure 1-8. Relationships among Interpretive Criteria

Site and Point Attributes in NASIS

Site and point attributes represent the second major area of NASIS. NASIS contains four objects for managing site and point attributes data. The Site, Pedon, Transect, and Site Association objects each contain several tables. These tables allow entry and maintenance of site description, soil profile descriptions, and the relationship between sites, such as satellite samples, and the relationship between pedons, such as transects. Data collected through monitoring projects, such as soil moisture content and soil temperature can also be recorded.

As with any objects in NASIS, the site, pedon, transect and site association objects are independent. Links between these objects and to objects within the other major areas of NASIS can be established.

Pedon PC is a separate software package available for recording pedon description and transect data. Pedon PC records the data in an Access database that is imported into the NASIS database for storage.

Soil Survey Goals and Progress

Prior to NASIS 6.0, the Legend object in NASIS contained several data elements and tables for entering soil survey mapping goals and recording progress against those goals. In NASIS 6.0 these data are moved to a new Project data object. Each legend that is linked to a 'Non-MLRA Soil Survey Area' will have a corresponding project. The new Project object can be used to manage soil survey projects, track progress, and manage other soil survey schedule data.

NASIS User Guide

Update soil survey projects are managed and progress is tracked by groups of map units. Update soil survey projects are generally designed to update either a specific subset of map unit properties for a subset of geographically or conceptually related map units. A map unit record is linked to a project through the Project Mapunit table. Any individual map unit that is part of an on-going update project can later be included in another project targeting a different subset of properties or map units.

Initial soil survey projects will continue to be managed by non-MLRA soil survey areas.

A new Technical Soil Services object has been added to the NASIS database. Resource Soil Scientists and other's can record technical soil service activities and results in the Technical Soil Services object.

The Performance Results System (PRS) will mine data in the Technical Soil Services object to facilitate and simplify accurate progress reporting for Conservation Technical Assistance.

NASIS 6 Design

NASIS 6 is built and deployed around a server-client model. The national database, the server side, is deployed within the NRCS Enterprise Data Center (EDC). The user interface and a copy of the database, the client side, are installed on a user's local computer. The client side software can be installed on both USDA CCE (Common Computing Environment) computers as well as on cooperator's non-CCE computers. Because the national database resides behind the USDA firewall in the EDC, an eAuthentication username and password is required for access.

The user interface connects to the national data base over the internet. A NASIS user downloads a subset of data from the national database to their local database for viewing and editing. Changes and additions to the data are later uploaded back to the national database (figure 6).

The national database has been built in Microsoft SQL Server database management software. The local database uses Microsoft SQL Server Express, a companion piece of software to SQL Server. The user interface is built using Microsoft .Net technology. The server-client model using Microsoft SQL Server and .Net enable a number of significant capabilities not available in previous versions of NASIS. These technologies allow a NASIS 6 user to view data, run reports, and perform limited other functions against the data in their local database while disconnected from the network. Users can also 'connect' to their local database as a read-only user with external applications, like Microsoft Access, to analyze data. Results can be joined to a corresponding subset of spatial data and viewed in ArcGIS. These capabilities will be more fully explored and developed with future versions.

NASIS User Guide

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Chapter 2: Working with NASIS Windows, Menus and Toolbars

The NASIS Window Environment

The NASIS 6 application is designed around a Microsoft Windows graphical user interface (GUI). Users can manipulate the application by means of toolbars (icons and buttons) and menu selections using a pointing device like a mouse. Shortcut keys are enabled for most toolbar and menu actions allowing users to manipulate the application directly from the keyboard as well. Like any other Windows application, the NASIS interface includes a variety of controls to customize the look and feel of the application to suit a user's particular preferences.

This chapter introduces the NASIS application window and describes the various panels, menus, toolbars, and other controls.

Learning the Parts of the NASIS Window

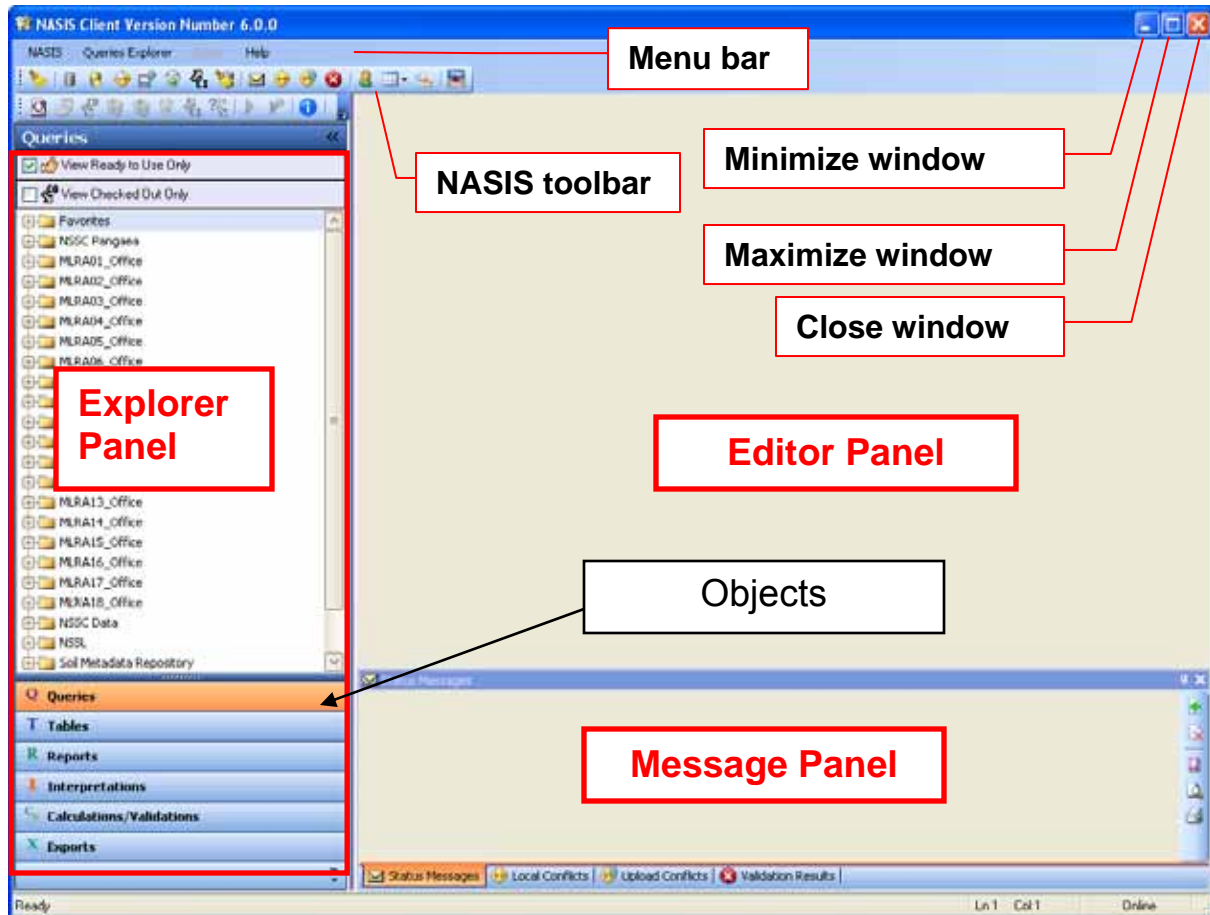
To start NASIS 6, click on the Windows "Start" button and select "All Programs, USDA Applications, Soils, NASIS."

After the NASIS window opens, use the graphic on page 2 to identify the various parts of the application window. Notice the familiar parts of a Windows application "title bar" location window. nr Ard

The NASIS nn5(cludethree phe)rimaryus pan a

Thsixhe NASlobjeleccatpudesre acducsiolbiw(licdow. f thExplorerhe pan: QuevarensTenabson,)6RepShoe

Opening Screen:

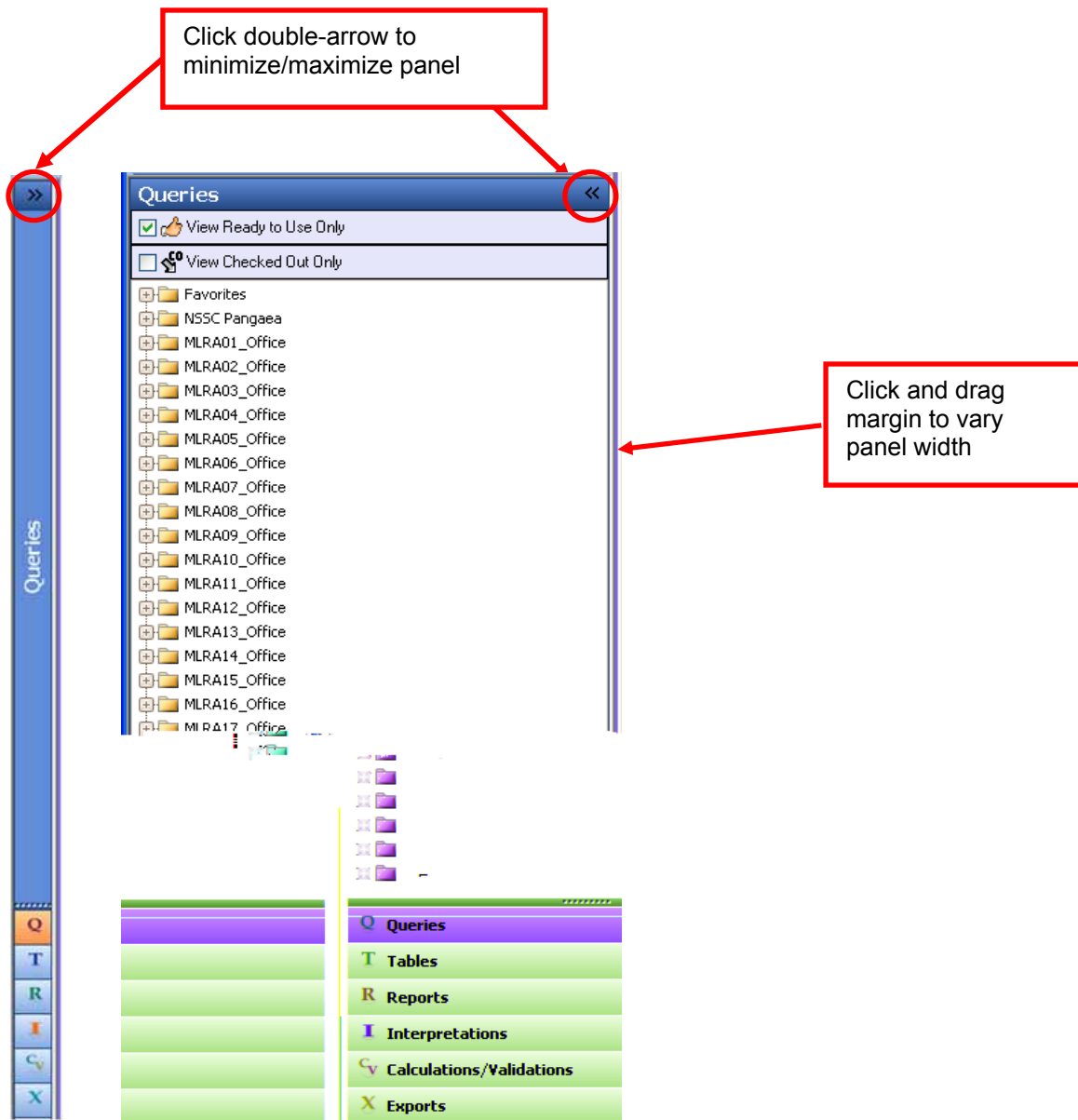


- The Title Bar contains the maximize, minimize and close icons.
- There are 3 panels within the NASIS window – the Explorer, Editor, and Message panels.
- There are four basic menu options: NASIS, Explorer, Editor, and Help.
- There are four toolbars in NASIS: NASIS toolbar, Explorer toolbar, Editor toolbar, and the Table toolbar.
- There are six objects: Queries, Tables, Reports, Interpretations, Calculations/Validations, Exports.
- Upon first starting NASIS, the NASIS toolbar is visible by default. This and other toolbars can be customized to user specifications.

Explorer Panel

The Explorer Panel provides navigation between the NASIS object types (Queries, Tables, Reports, Interpretations, Calculations/Validations and Exports) and sub objects. The items displayed in the panel change depending on which object is selected at the bottom of the panel. The various items are arranged in a 'tree' fashion similar to file folders in Windows Explorer. The respective Explorer Toolbar for each object type is displayed at the top of the explorer panel.

The width of the Explorer Panel can be varied by clicking and dragging the right margin of the panel. It can be minimized (or auto-hide) by clicking the double-arrow button in its upper right corner and returned to maximum view using the same button. These actions provide more or less screen territory for the Editor Panel.



Editor Panel

The Editor Panel is the area of the application window where an open NASIS object is displayed and manipulated. Multiple objects can be open in the Editor Panel at the same time. Each open object is contained within a separate tab across the top of the Editor Panel. The name on each tab identifies the object and the icon at the left on each tab indicates the object type. An open object that has the focus can be closed by clicking the “x” at the upper right of the Editor Panel (not to be confused with the “x” in the bright red box at the right end of the window title bar, which when clicked will close the NASIS application).

The Editor Menu and Toolbar will change depending on the type of object contained in the tab that has the focus in the Editor Panel. The NASIS application includes an Editor Menu and Toolbar for each of the six primary NASIS objects: Queries, Tables, Reports, Interpretations, Calculations/Validations, and Exports Editor.

In the graphic on the following page, notice that the Editor Panel contains the following open objects: Table-“Mapunit”, Query-“Area/Mapunit/Datamapunit...”, Report-“UTIL – Comparison ...”, Interpretation Rule-“ENG – Dwellings with Basements”. Note the icons corresponding to each object type displayed to the left of the object name in each tab. Notice also that the Table-“Mapunit” has the focus.

When the focus in the Editor Panel is on a Table object, a series of buttons become visible at the bottom of the Panel. These buttons provide a variety of table navigation and edit functions. The NASIS application window also displays a Table Toolbar when the focus is on a Table object.

The Editor Menus and Toolbars and Table Toolbar are described later in this chapter.

Editor Menu

Edit Toolbar

Table Toolbar

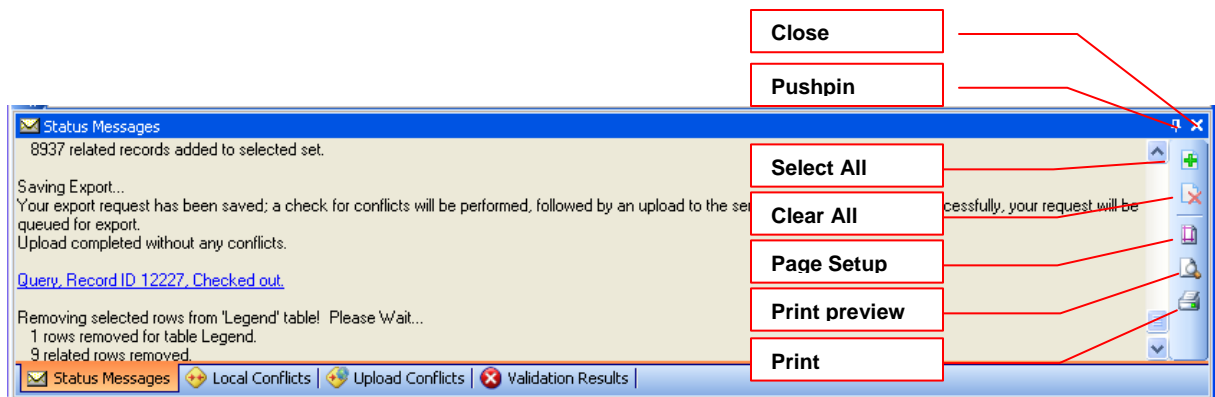
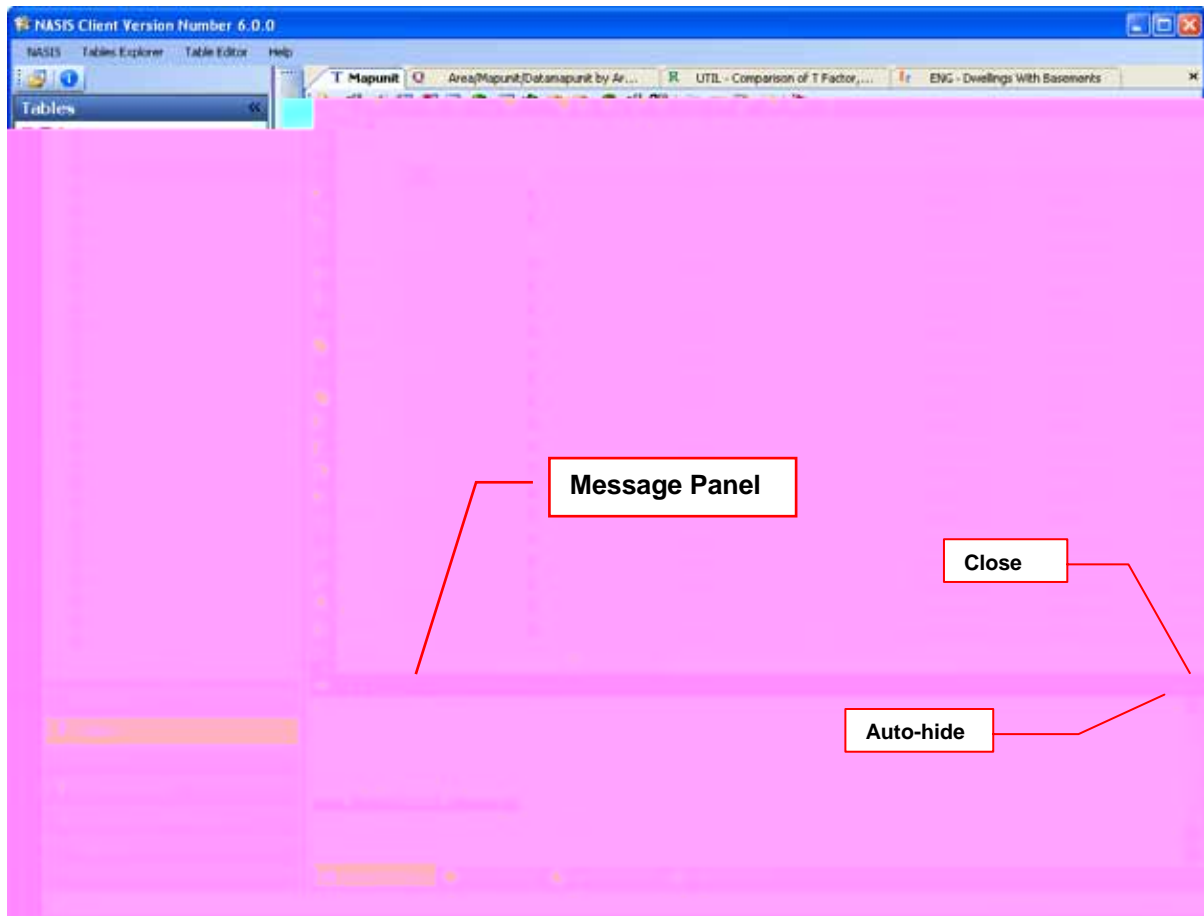


Message Panel

The Message Panel displays information the status and results of active and completed application processes; for example, querying data, running reports, copy/paste operations, local and upload conflicts, validations, or synchronizing data. The Message Panel displays one of the four message panes: Status Messages, Local Conflicts, Upload Conflicts, and Validation Results. To change to another message panel, click on the tab for that panel at the bottom of the Message Panel. Within each tab, messages accumulate throughout the NASIS session. The most current information is always at the bottom. At the right side of the Message Panel is a Toolbar to assist in the management of the messages.

Clicking on the “pushpin” icon at the right of the Message Panel title bar (blue bar) will turn on auto-hide for the Panel. When auto-hide is on, the Message Panel will collapse when the focus is on the Editor Panel. Clicking on the “x” at the upper right will close the Message Panel. If the Panel is closed, it can be restored by going to the NASIS menu and choosing one of the 4 message actions. Also, the Message Panel may be docked to another location in the NASIS application or undocked to outside the application window by dragging the title bar to a new location. “Anchor points” showing locations within the application window where the Panel can be docked will appear when the Panel is being moved.

NASIS User Guide



NASIS Toolbar and Menu

The NASIS Toolbar and Menu provide basic functions used in managing the data in the local database and selected set.



Each menu has a corresponding Tool bar icon. The Menu contains the icon and a label for each menu choice. Placing the mouse over a menu item will bring a tool tip (mouse over) with a brief description of the item's function.

The NASIS menu is static. It contains the general functions common to all Explorer panes. The NASIS menu has four main sections:

1. those operations dealing with the database,
2. those dealing with Message Panel,
3. one menu option to manage the user profile and default group and two menu options to manage the look and feel of the user interface and
4. the import of Pedon data.

Manage User Profile

Windows Login: AGLO\paul.finnell

Name: Finnell, Paul R.

Description: National Database Management Specialist

Phone: 402-437-4136

E-mail Address: paul.finnell@lin.usda.gov

Default NASIS Site: NSSC Data

Default NASIS Group: Agronomy

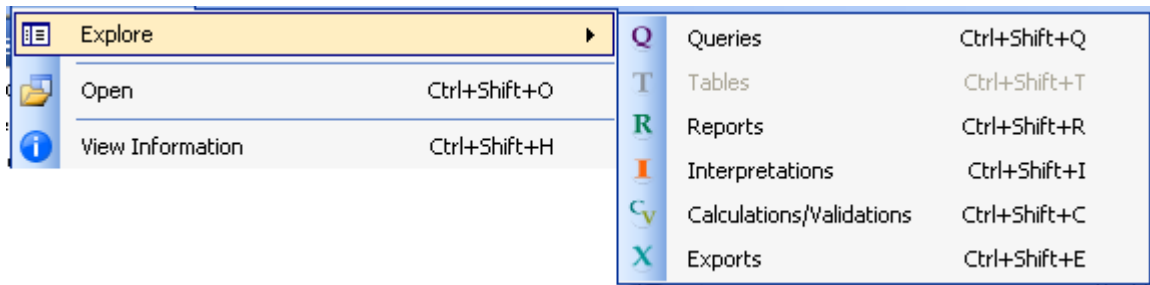
Object Last Updated: 8/31/2009 2:03:10 PM

Save Cancel

The “Manage User Profile...” item is used to maintain the user phone number, e-mail address, and Default NASIS Group.

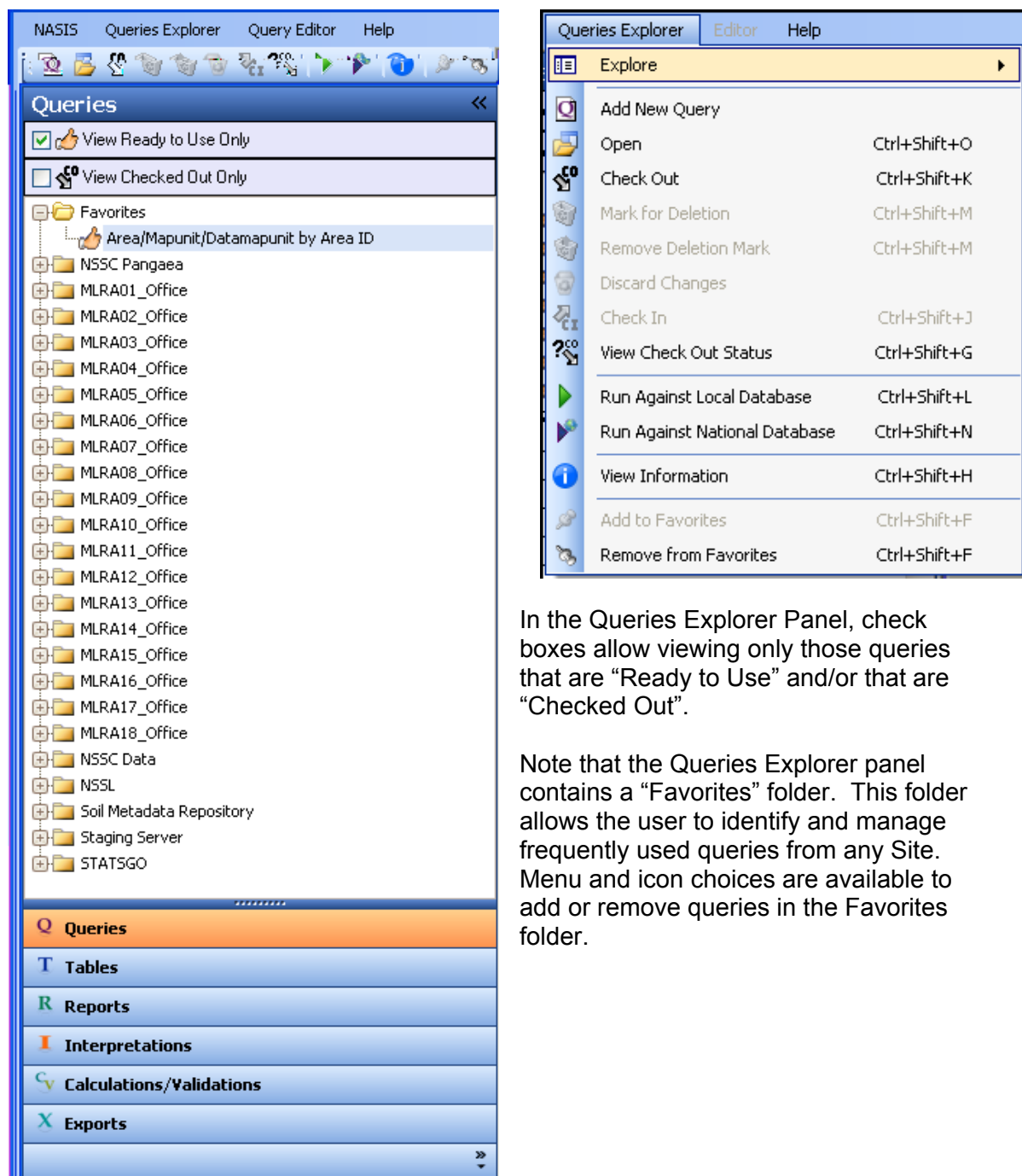
Explorer Toolbars and Menus

Each Explorer Toolbar and Menu includes an item for changing the focus of the Explorer Panel to a different NASIS object and thereby changing the Explorer Toolbar and Menu to the corresponding toolbar and menu. The Explorer Toolbars and Menus are tailored to the needs of the specific object that has the focus in the Explorer Panel. In the menus, each item includes the shortcut keys that can be used to execute the action directly from the keyboard. Each toolbar and menu also has a “View Information” item to open the NASIS help and display data dictionary information about the object.



Queries Explorer Toolbar and Menu

The **Queries Explorer** Toolbar and Menu provides the tools necessary to manage and run a query. Toolbar icons and menu items are highlighted or dimmed based on the users' actions. The Queries Explorer Toolbar is above the Explorer Panel.

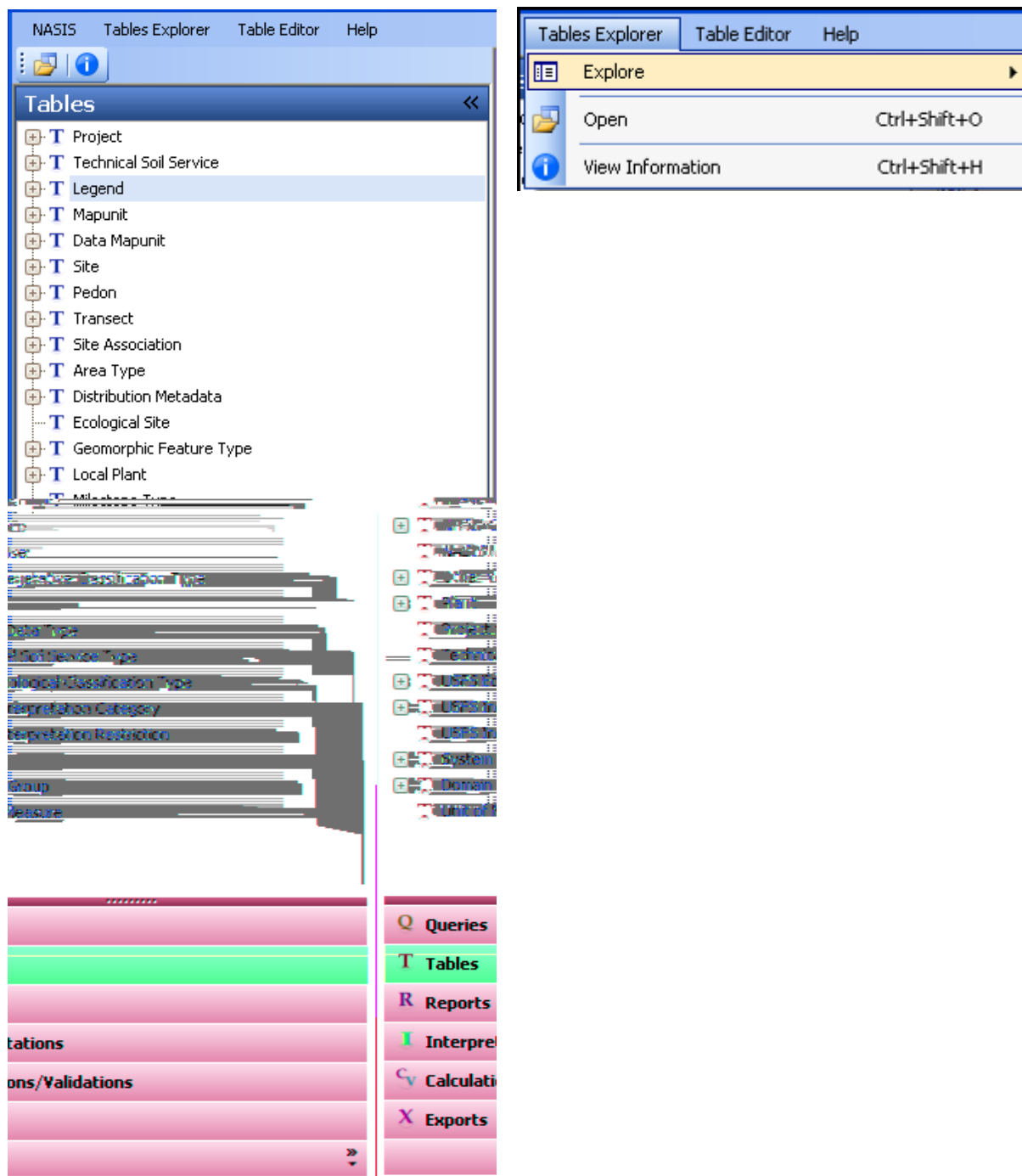


In the Queries Explorer Panel, check boxes allow viewing only those queries that are “Ready to Use” and/or that are “Checked Out”.

Note that the Queries Explorer panel contains a “Favorites” folder. This folder allows the user to identify and manage frequently used queries from any Site. Menu and icon choices are available to add or remove queries in the Favorites folder.

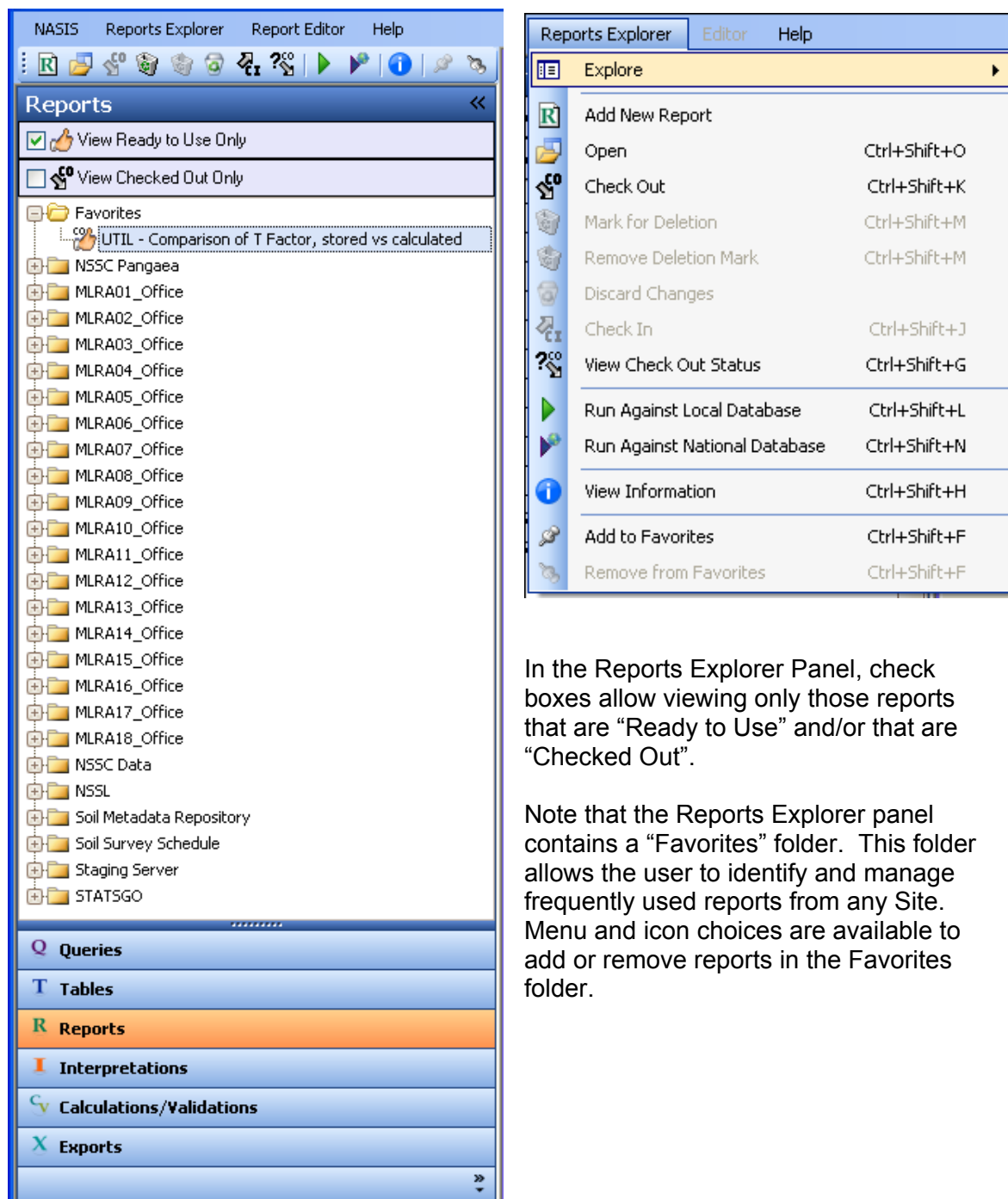
Tables Explorer Toolbar and Menu

The **Tables Explorer** Toolbar and Menu are used to open the selected table in the Editor Panel. The Tables Explorer Toolbar is above the Explorer Panel.



Reports Explorer Toolbar and Menu

The **Reports Explorer** Toolbar and Menu are used to manage and run a report. Toolbar icons and menu items are highlighted or dimmed based on the users' actions. The Reports Explorer Toolbar is above the Explorer Panel.

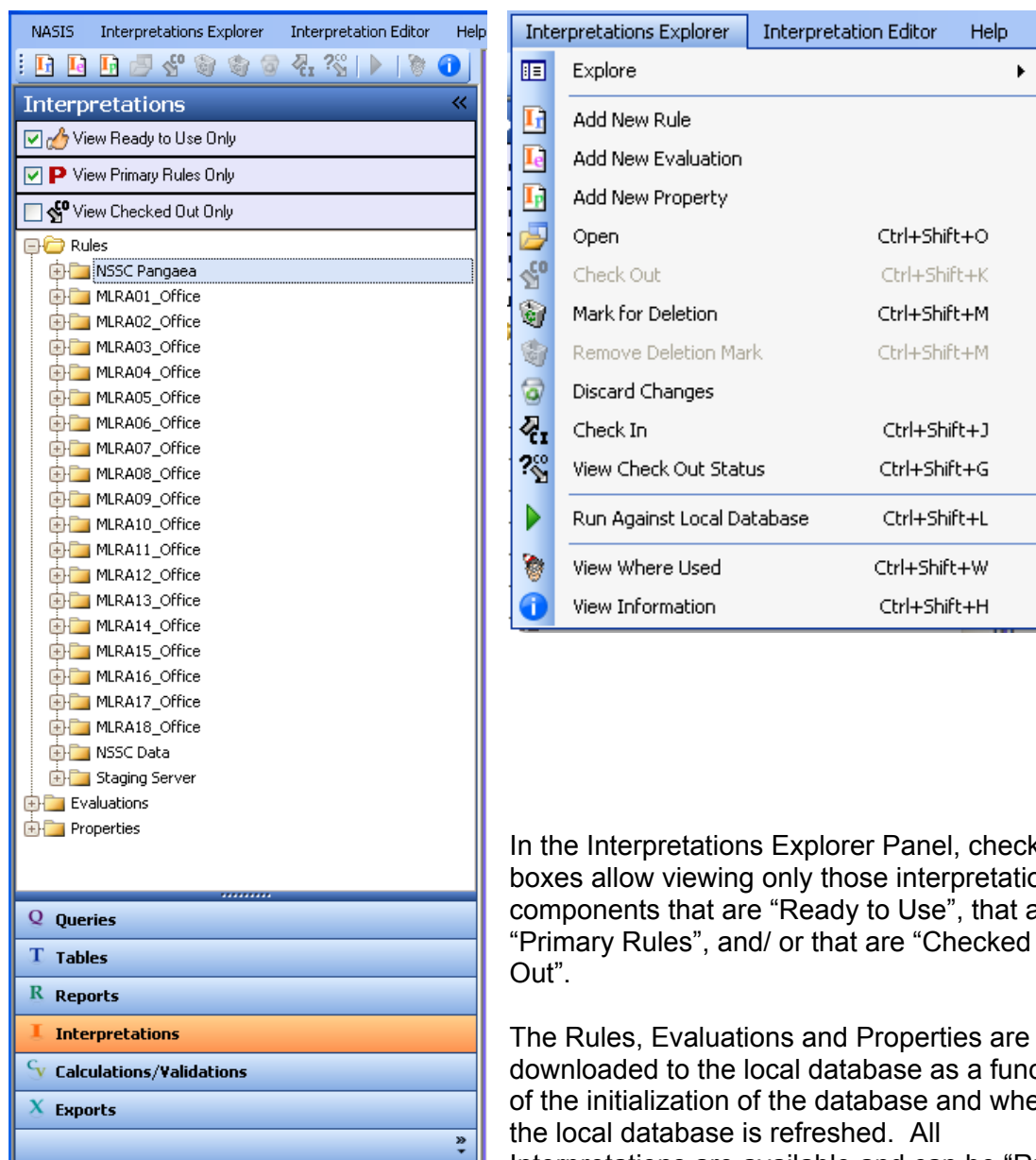


In the Reports Explorer Panel, check boxes allow viewing only those reports that are “Ready to Use” and/or that are “Checked Out”.

Note that the Reports Explorer panel contains a “Favorites” folder. This folder allows the user to identify and manage frequently used reports from any Site. Menu and icon choices are available to add or remove reports in the Favorites folder.

Interpretations Explorer Toolbar and Menu

The **Interpretations Explorer** Toolbar and Menu are used to manage the Rules, Evaluations and Properties that constitute interpretations. Toolbar icons and menu items are highlighted or dimmed based on the users' actions. The Interpretations Explorer Toolbar is above the Explorer Panel.



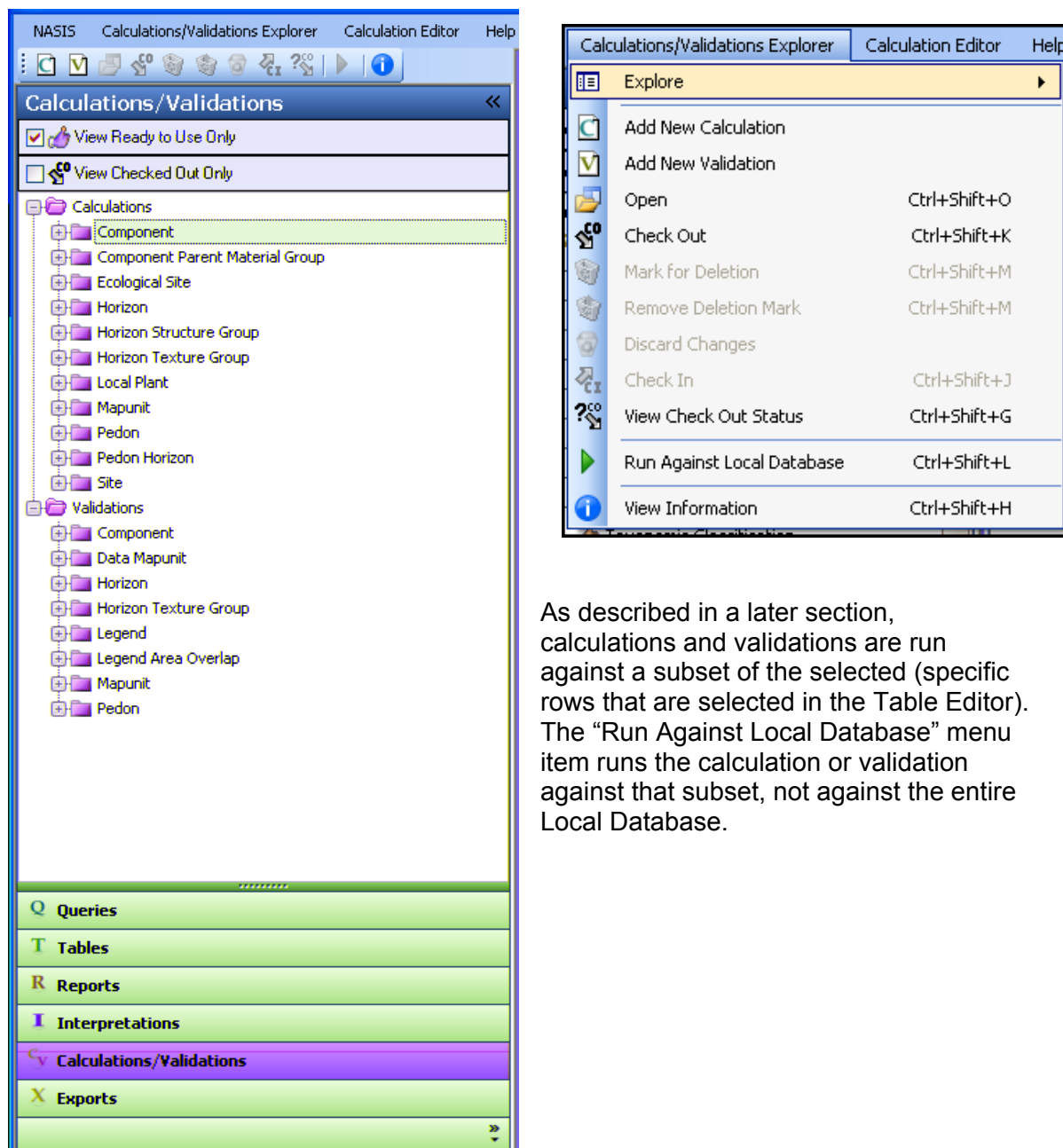
In the Interpretations Explorer Panel, check boxes allow viewing only those interpretation components that are “Ready to Use”, that are “Primary Rules”, and/ or that are “Checked Out”.

The Rules, Evaluations and Properties are downloaded to the local database as a function of the initialization of the database and when the local database is refreshed. All Interpretations are available and can be “Run

Against Local Database” independent of a report.

Calculations/Validations Explorer Toolbar and Menu

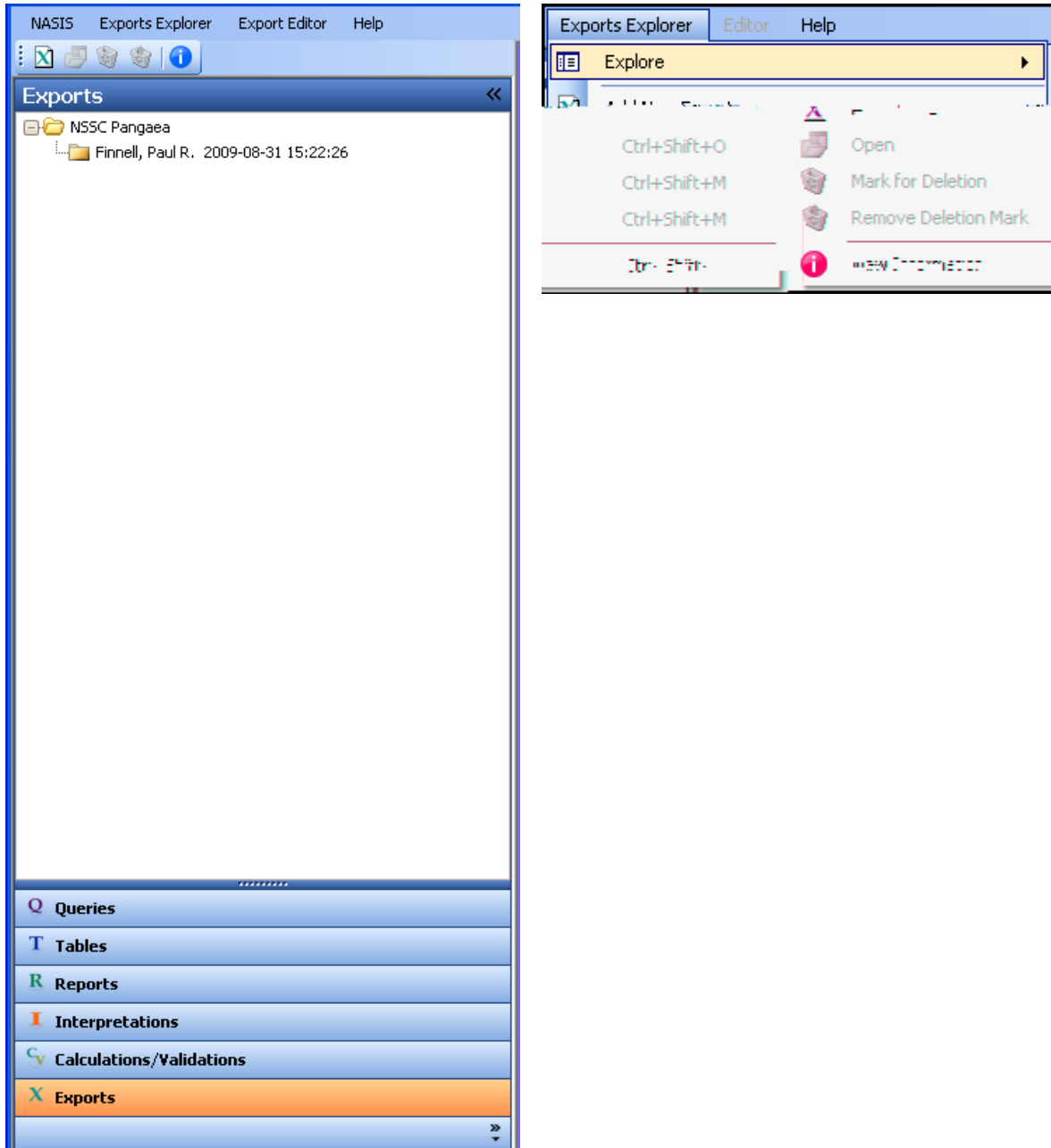
The **Calculations/Validations Explorer** Toolbar and Menu are used to manage calculations and validations by those with permission and to run calculations and validations by all users. Toolbar icons and menu items are highlighted or dimmed based on the users' actions. The Calculations/Validations Explorer Toolbar is above the Explorer Panel.



As described in a later section, calculations and validations are run against a subset of the selected (specific rows that are selected in the Table Editor). The "Run Against Local Database" menu item runs the calculation or validation against that subset, not against the entire Local Database.

Exports Explorer Toolbar and Menu

The **Exports Explorer** Toolbar and Menu are used to define export parameters and otherwise manage exports. Toolbar icons and menu items are highlighted or dimmed based on the users' actions. The Exports Explorer Toolbar is above the Explorer Panel.



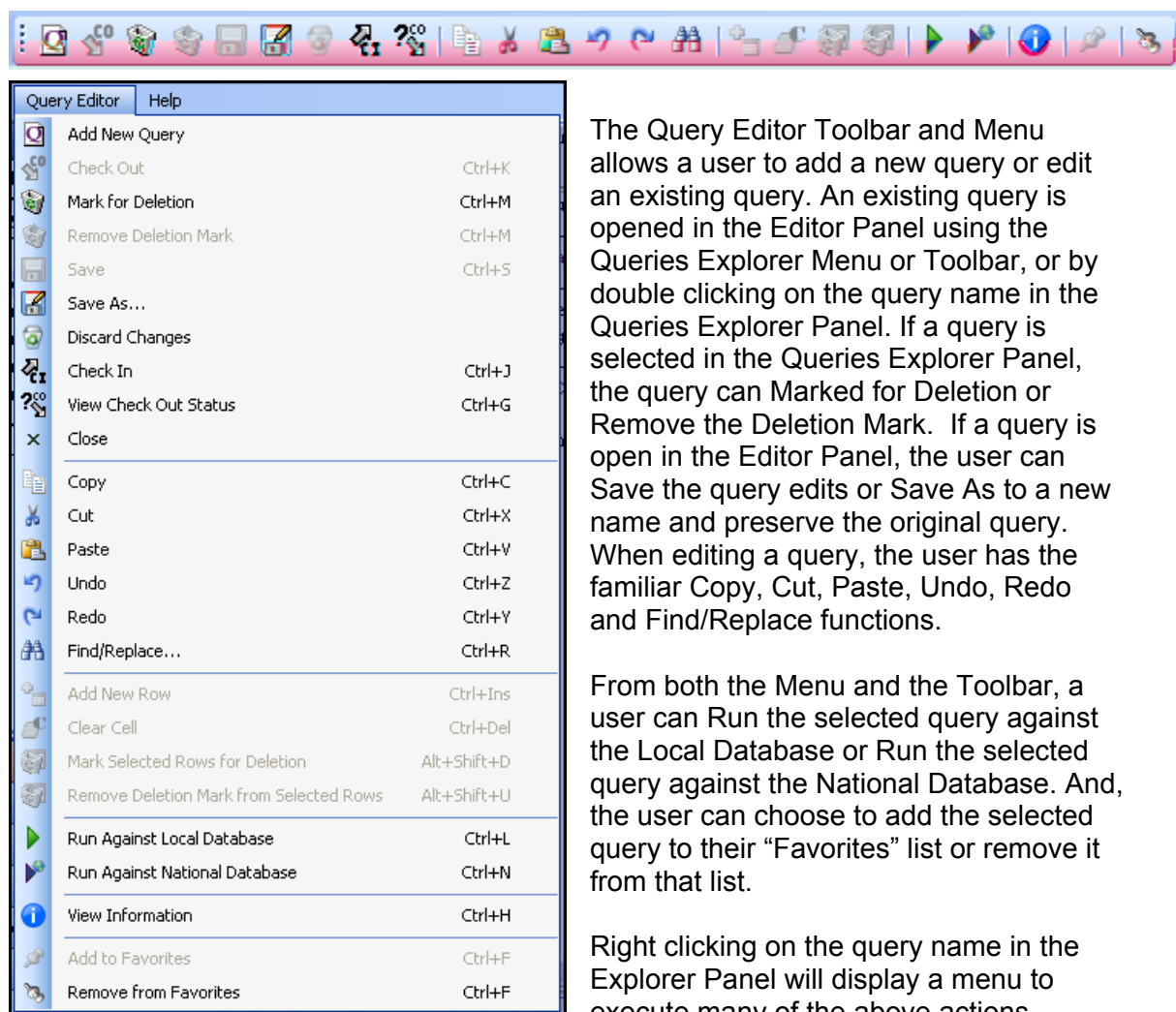
Editor Toolbar and Menu

The Editor Toolbars and Menus are designed to assist the user in editing the specific object types in the Explorer Panel. There is a separate Editor Toolbar and Menu for each NASIS object type. Every item in a Menu has a corresponding button on the Toolbar to perform the same action. In the menus, each item displays the shortcut keys that can be used to execute the action directly from the keyboard. Each toolbar and menu also has a “View Information” item to open the NASIS help and display data dictionary information about the object.

The Editor Toolbar and Menu that is displayed changes depending on the object type that has the focus in the Editor Panel. Toolbar buttons and Menu items are highlighted or dimmed based on the users’ actions.

Query Editor Toolbar and Menu

The **Query Editor** Toolbar and Menu provides the tools necessary to manage and execute NASIS queries. The Editor Toolbar is above the Edit panel (by default).



Action	Shortcut
Add New Query	
Check Out	Ctrl+K
Mark for Deletion	Ctrl+M
Remove Deletion Mark	Ctrl+M
Save	Ctrl+S
Save As...	
Discard Changes	
Check In	Ctrl+J
View Check Out Status	Ctrl+G
Close	
Copy	Ctrl+C
Cut	Ctrl+X
Paste	Ctrl+V
Undo	Ctrl+Z
Redo	Ctrl+Y
Find/Replace...	Ctrl+R
Add New Row	Ctrl+Ins
Clear Cell	Ctrl+Del
Mark Selected Rows for Deletion	Alt+Shift+D
Remove Deletion Mark from Selected Rows	Alt+Shift+U
Run Against Local Database	Ctrl+L
Run Against National Database	Ctrl+N
View Information	Ctrl+H
Add to Favorites	Ctrl+F
Remove from Favorites	Ctrl+F

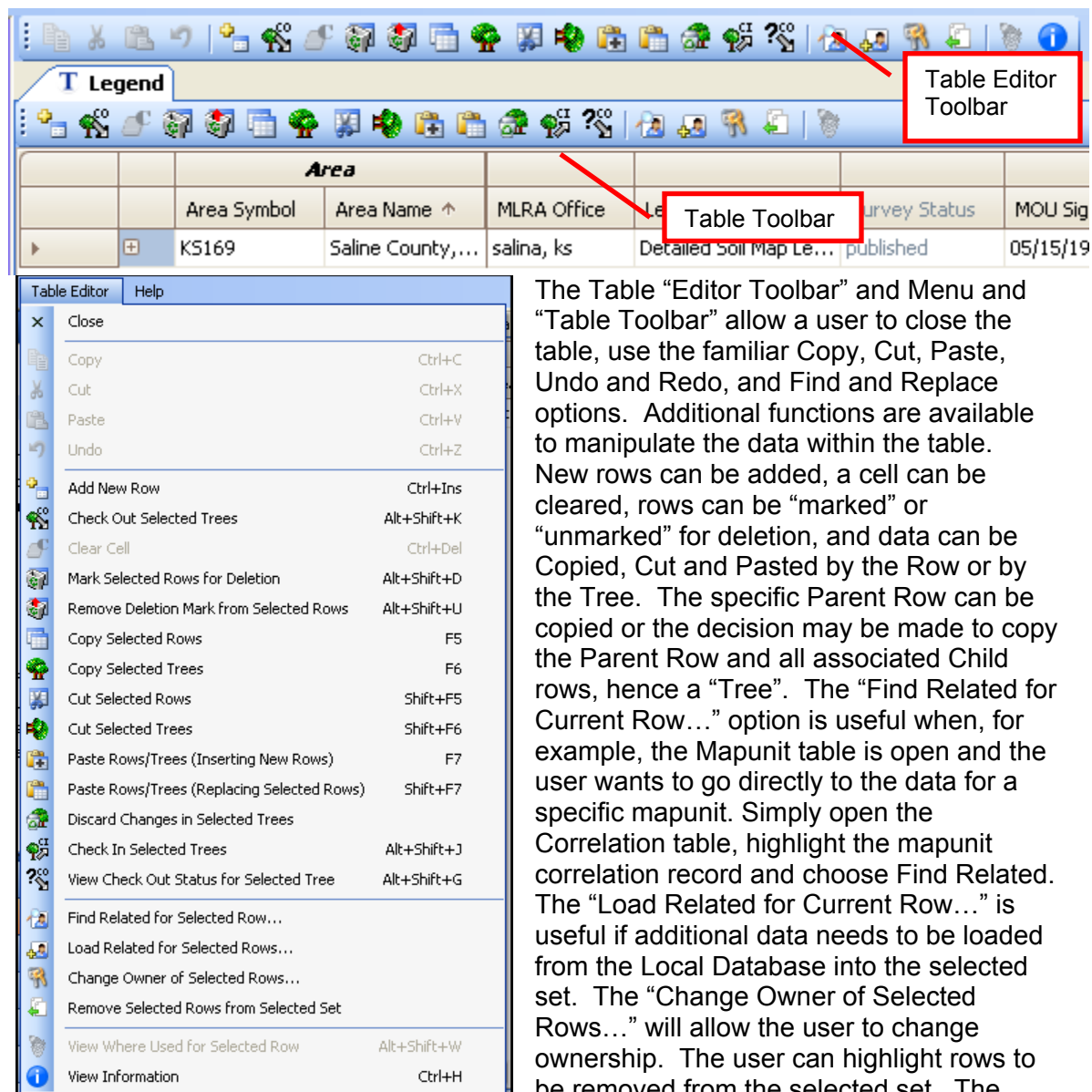
The Query Editor Toolbar and Menu allows a user to add a new query or edit an existing query. An existing query is opened in the Editor Panel using the Queries Explorer Menu or Toolbar, or by double clicking on the query name in the Queries Explorer Panel. If a query is selected in the Queries Explorer Panel, the query can be Marked for Deletion or Remove the Deletion Mark. If a query is open in the Editor Panel, the user can Save the query edits or Save As to a new name and preserve the original query. When editing a query, the user has the familiar Copy, Cut, Paste, Undo, Redo and Find/Replace functions.

From both the Menu and the Toolbar, a user can Run the selected query against the Local Database or Run the selected query against the National Database. And, the user can choose to add the selected query to their “Favorites” list or remove it from that list.

Right clicking on the query name in the Explorer Panel will display a menu to execute many of the above actions.

Table Editor Toolbar and Menu and Table Toolbar

The **Table Editor** Toolbar and Menu and the **Table Toolbar** provide the tools necessary to manage tables in the Editor Panel and create records and edit data in a table. The Table Editor Toolbar is above the Editor Panel (by default). The Table Editor Toolbar and the Table Toolbar are similar toolbars. The Table Toolbar is functional only when a table has the focus in the Editor Panel.



“View Information” provides information on the selected table.

Report Editor Toolbar and Menu

The **Report Editor** Toolbar and Menu provides the tools necessary to manage reports. The Report Editor Toolbar is above the Editor Panel (by default).



Report Editor		Help
	Add New Report	
	Check Out	Ctrl+K
	Mark for Deletion	Ctrl+M
	Remove Deletion Mark	Ctrl+M
	Save	Ctrl+S
	Save As...	
	Discard Changes	
	Check In	Ctrl+J
	View Check Out Status	Ctrl+G
	Close	
	Copy	Ctrl+C
	Cut	Ctrl+X
	Paste	Ctrl+V
	Undo	Ctrl+Z
	Redo	Ctrl+Y
	Find/Replace...	Ctrl+R
	Add New Row	Ctrl+Ins
	Clear Cell	Ctrl+Del
	Mark Selected Rows for Deletion	Alt+Shift+D
	Remove Deletion Mark from Selected Rows	Alt+Shift+U
	Run Against Local Database	Ctrl+L
	Run Against National Database	Ctrl+N
	View Information	Ctrl+H
	Add to Favorites	Ctrl+F
	Remove from Favorites	Ctrl+F

An existing report is opened in the Editor Panel using the Reports Explorer Toolbar or Menu or by double clicking on the report name in the Reports Explorer Panel. The Report Editor Toolbar and Menu will allow a user to create a new report. A user can Save the report edits, or Save As to a new name and preserve the original report. The user can close a selected report. When editing a report, the user has the familiar Copy, Cut, Paste, Undo, Redo and Find/Replace functions.

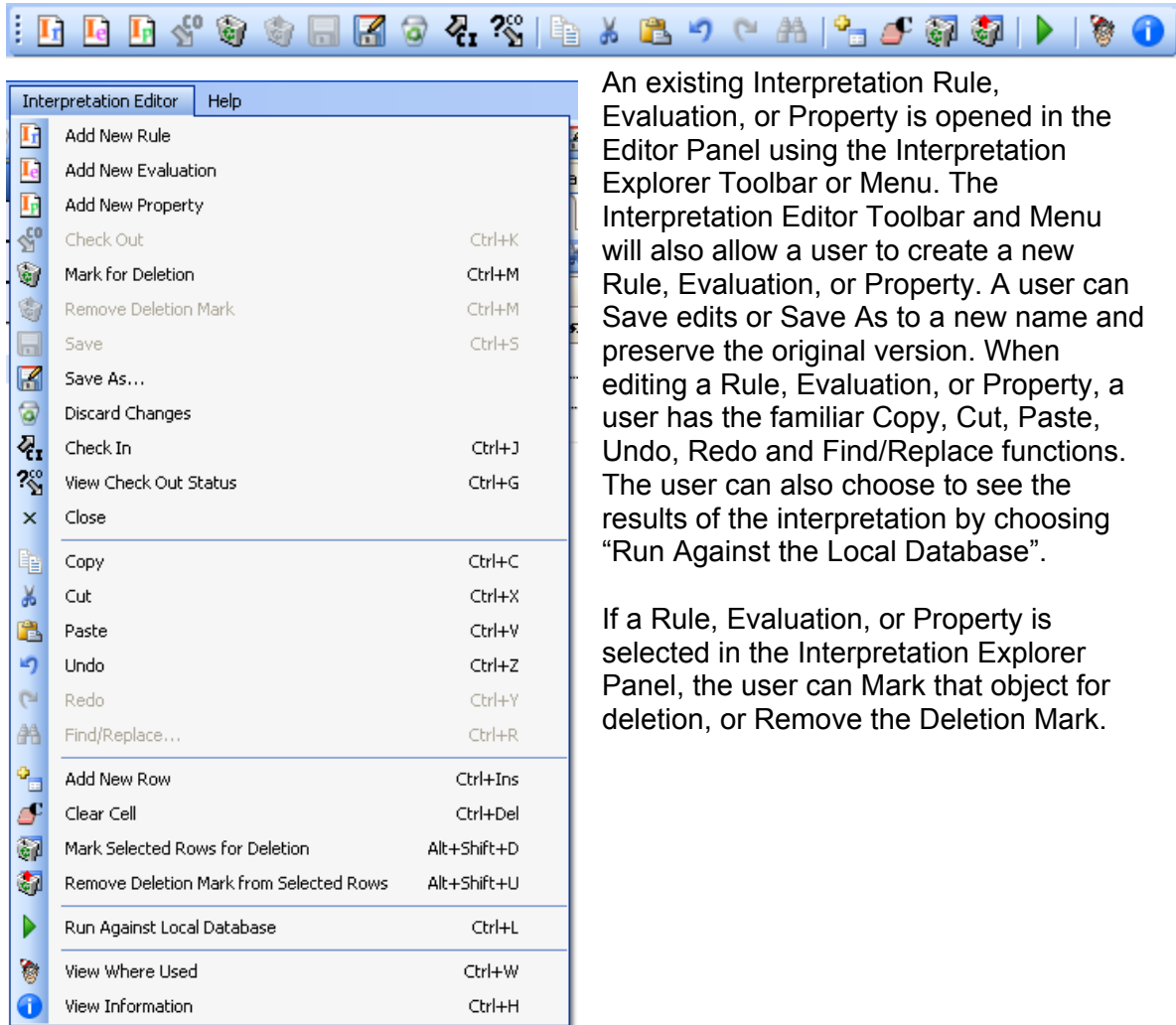
The user can also choose to “Run Against Local Database”, or “Run Against National Database”. The user can view information about the Report table. And, the user can choose to add the selected report to their “Favorites” list or remove it from that list.

Note: Use caution when running reports against the national database. Reports run against the national database should include filters specific to the data needed.

If a report is selected in the Reports Explorer Panel, the user can Mark that report for deletion, or Remove the Deletion Mark.

Interpretation Editor Toolbar and Menu

The **Interpretation Editor** Toolbar and Menu provides the tools necessary to manage interpretation rules, evaluations, and properties. The Interpretation Editor Toolbar is above the Editor Panel (by default).

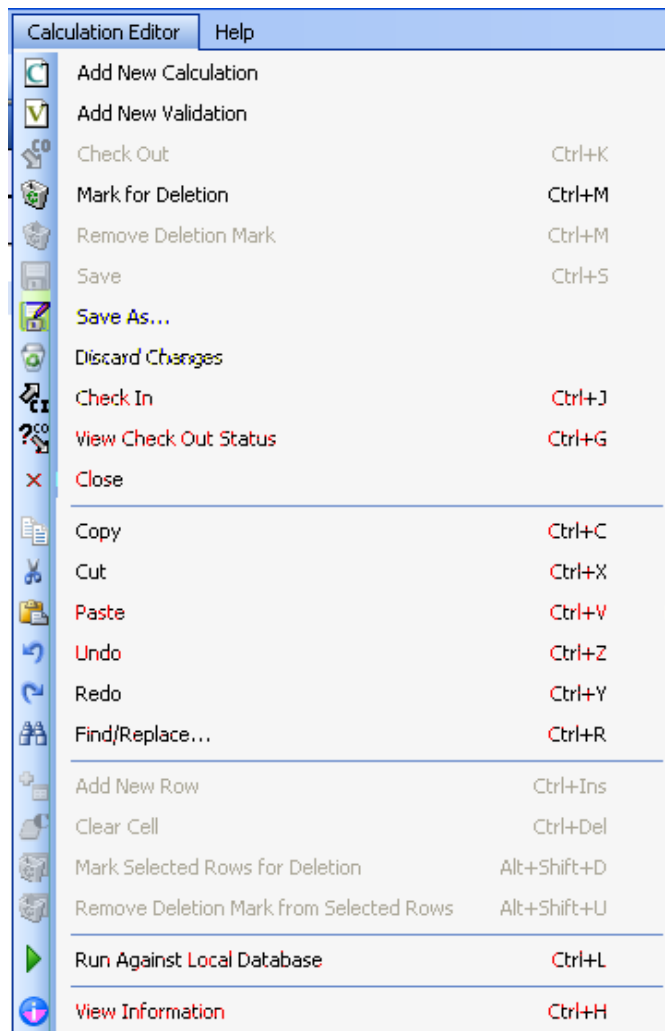


An existing Interpretation Rule, Evaluation, or Property is opened in the Editor Panel using the Interpretation Explorer Toolbar or Menu. The Interpretation Editor Toolbar and Menu will also allow a user to create a new Rule, Evaluation, or Property. A user can Save edits or Save As to a new name and preserve the original version. When editing a Rule, Evaluation, or Property, a user has the familiar Copy, Cut, Paste, Undo, Redo and Find/Replace functions. The user can also choose to see the results of the interpretation by choosing "Run Against the Local Database".

If a Rule, Evaluation, or Property is selected in the Interpretation Explorer Panel, the user can Mark that object for deletion, or Remove the Deletion Mark.

Calculation and Validation Editor Toolbar and Menu

The **Calculation/Validation Editor** Toolbar and Menu provides the tools necessary to manage NASIS calculations and validations. The Calculation/Validation Editor Toolbar is above the Editor Panel (by default).



An existing calculation or validation is opened in the Editor Panel using the Calculation/Validation Explorer Toolbar or Menu. The Calculation/Validation Editor Toolbar and Menu will also allow an authorized user to create a new calculation or validation. An authorized user can Save edits or Save As to a new name and preserve the original calculation or validation. When editing a calculation, the user has the familiar Copy, Cut, Paste, Undo, Redo and Find/Replace functions.

Any user can choose to Run the selected Calculation or Validation by choosing “**Run Against Local Database**”. Calculations and validations are run against a subset of the selected (specific rows that are selected in the Table Editor). The “Run Against Local Database” menu item runs the calculation or validation against that subset, not against the entire Local Database.

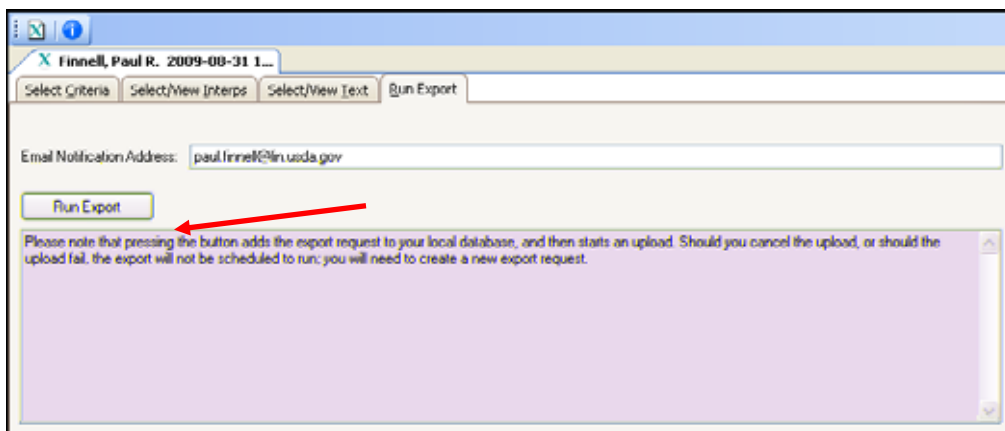
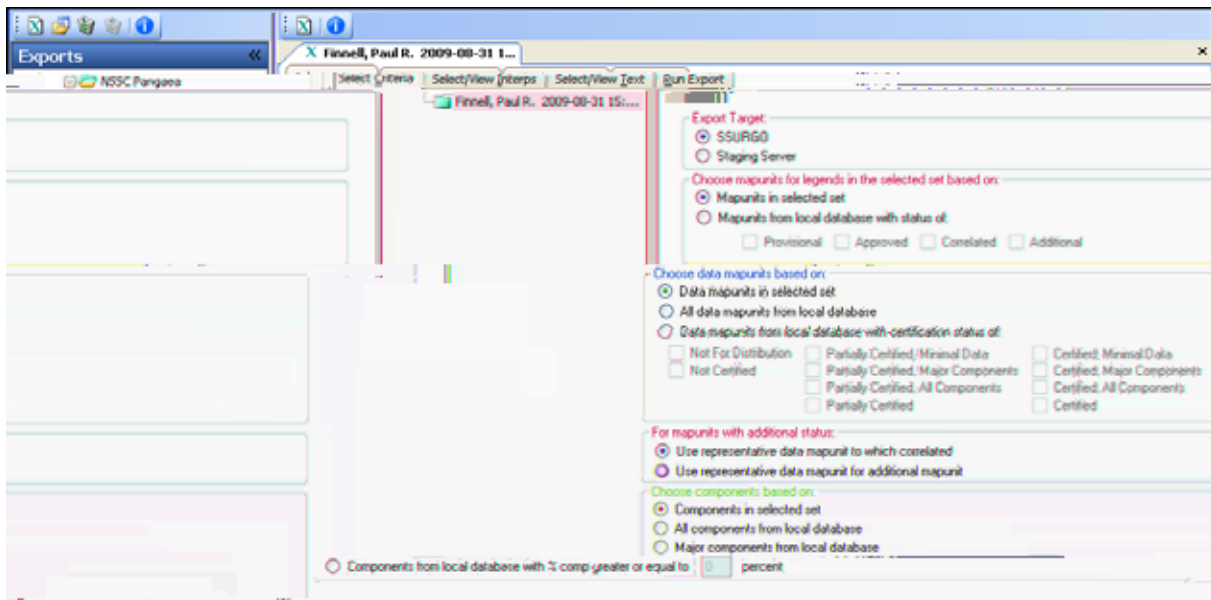
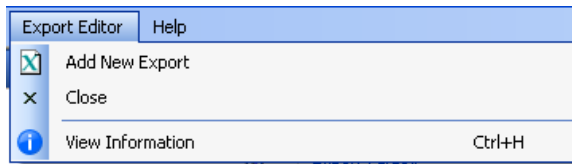
If a Calculation or Validation is selected in the

Calculation/Validation Explorer Panel, an authorized user can Mark that Calculation or Validation for deletion or Remove the Deletion Mark.

Export Editor Toolbar and Menu

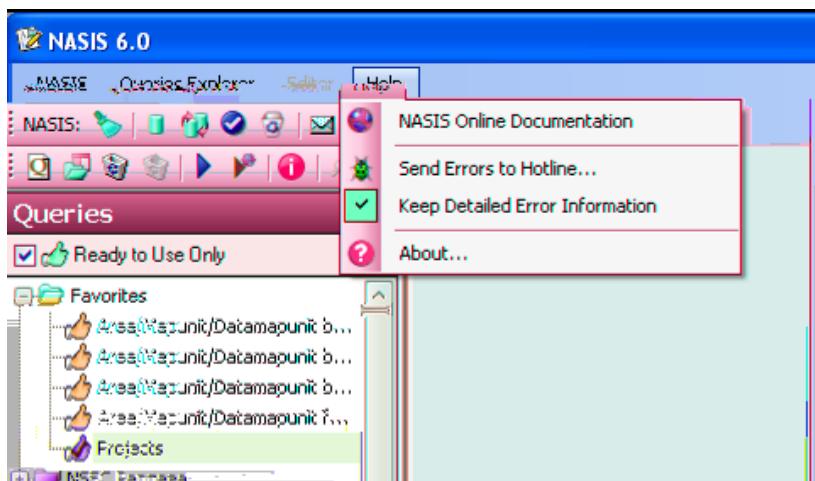
The **Export Editor** Toolbar and Menu provides the tools necessary to manage NASIS export. The Export Editor Toolbar is above the Editor Panel (by default).

An existing export is opened in the Editor Panel using the by double clicking on the export in the Export Explorer Panel. The Export Editor Toolbar and Menu will allow the user to create a new export. The Export Editor Panel is used to identify the export target and the specific export parameters and to run the export. The Export Editor Panel has four tabs that allow the user to set the export parameters, identify the interpretations and text field to include with the export, and to Run the export. All users can run SSURGO exports. Only authorized users can run Staging Server exports.

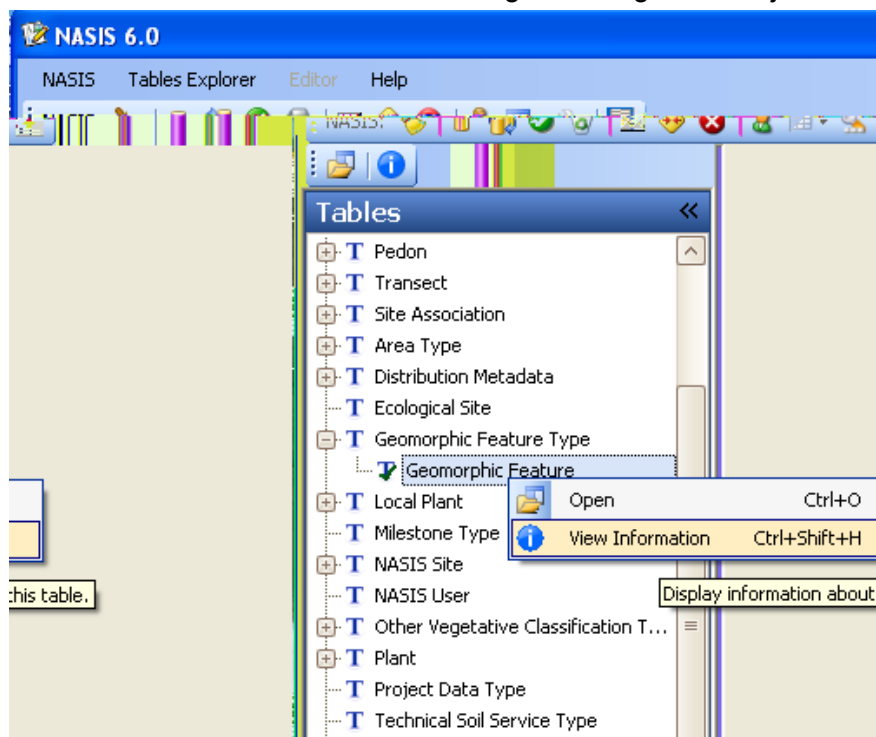


NASIS Help

The two forms of help are available from the NASIS application window: online documentation and data dictionary information about specific NASIS objects. The **Help** Menu provides access to NASIS online documentation maintained on the Soils Home Page web site. The Help Menu also allows a user to send error reports to the NASIS hotline.



Data dictionary information about NASIS objects is accessed two ways. All Explorer and Editor Toolbars and Menus have a "View Information" choice. Right clicking on an object name in the Explorer Panel and on column headers and other key places in the Editor Panel will display a pop-up menu that also has a View Information choice. In this graphic, right clicking on the **Geomorphic Feature** from the Tables Explorer Panel displays the pop-up menu and the View Information choice.



NASIS User Guide

The View Information menu choice will open a browser window and displays detailed information contained in the NASIS data dictionary about the target object. Hyperlinks within the browser display point to additional information. The graphic below illustrates about the Geomorphic Feature Type table accessed from the View menu.

The screenshot shows a web browser window titled 'geomorphfeattype: Table Information - Microsoft Internet Explorer'. The address bar shows 'http://localhost:306/geomorphfeattype/tableInfo.aspx'. The main content area displays information for the 'geomorphfeattype' table.

Information for Table "geomorphfeattype"

Table Attributes

Attribute Name	Attribute Value
NASIS Business Object Name	Geomorph Feat Type
Table ID	1182
Table Physical Name	geomorphfeattype
Table Logical Name	geomorph_feature_type
Table Label	Geomorphic Feature Type
Primary Key Column Physical Name	geomfid

Alternate Unique Constraints (column physical name, ...):
(geomfname)

Table Description:
The Geomorphic Feature Type table lists the kinds of geomorphic features (landscapes, landforms, etc.) available to users as choice lists in the Geomorphic Description system.

Columns

Default Sequence	Column Physical Name	Foreign Key Column?	Column Group Label	Column Label
1	geomfname	No		Feature Type
2	geomfdescr	No		Description
3	chterm	No		Obsolete?
4	fldcode	No		Field Code
5	notes	No		Notes
6	geomfid	Yes	Geomorphic Feature Type NASIS Site	One or more columns from a related table are displayed in lieu of this foreign key column.

The columns you see in NASIS, and the order of those columns, may not match what is shown in the table above. For a table implemented as a spreadsheet, you may have rearranged the order of the columns in that table, and you may have hidden one or more columns in that table. For a table implemented as a form, the columns may not have been laid out in the same order as shown in the table above, and not all of the columns in that table may have been included on that form.

Related Parent Tables

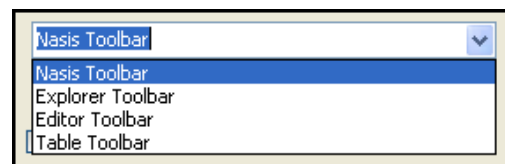
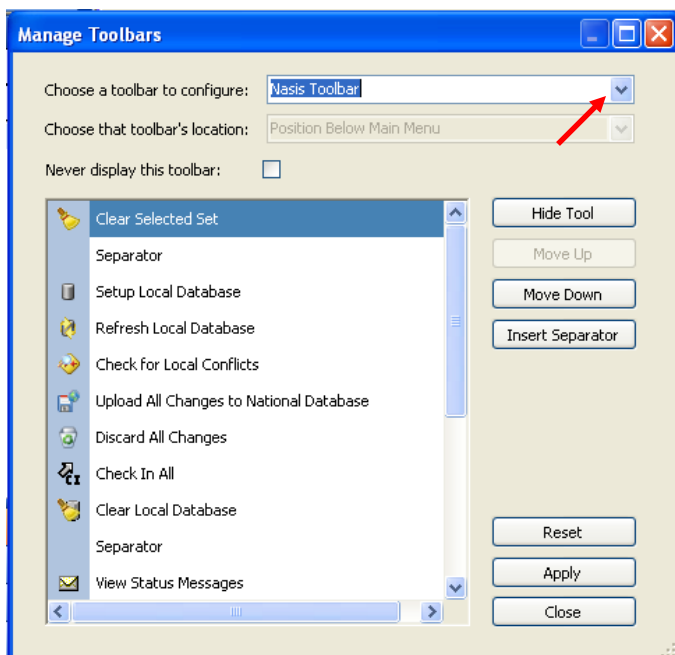
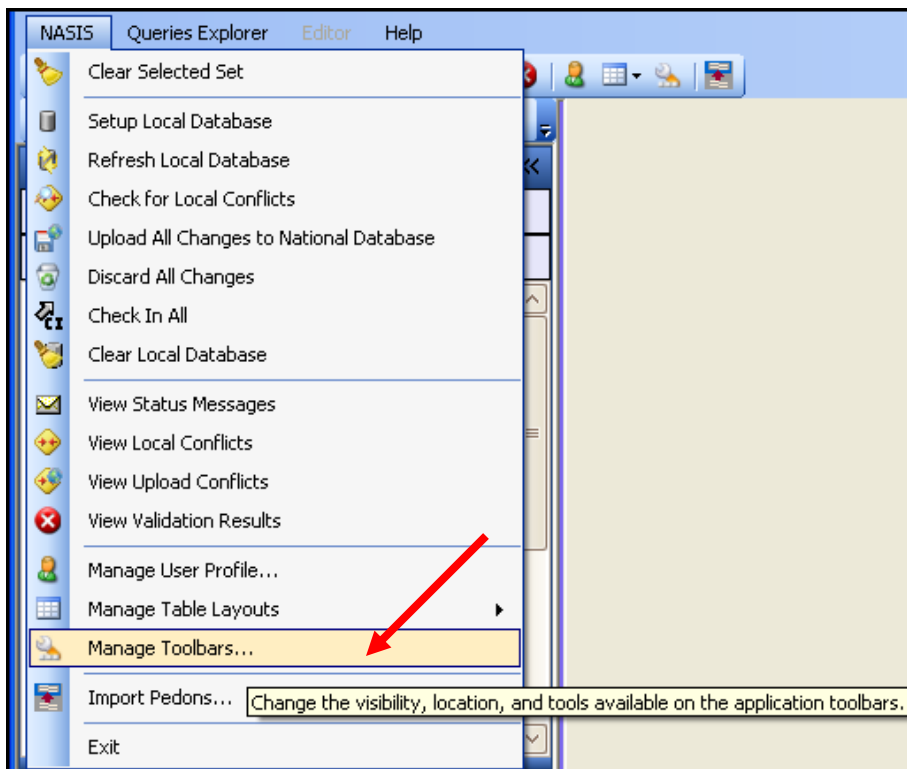
Table Label	NASIS Business Object Name	Relationship Name	Find Load Related Enabled?
NASIS Group	NASIS Site	default	Yes
NASIS Site	NASIS Site	default	Yes
NASIS User	NASIS User	record_last_updated_by	Yes
NASIS User	NASIS User	object_last_updated_by	No

Because it takes a few moments for the View Information browser window to open, after it is opened for the first time it should be left open for the duration of the NASIS session to speed up later access to information.

Managing NASIS Toolbars

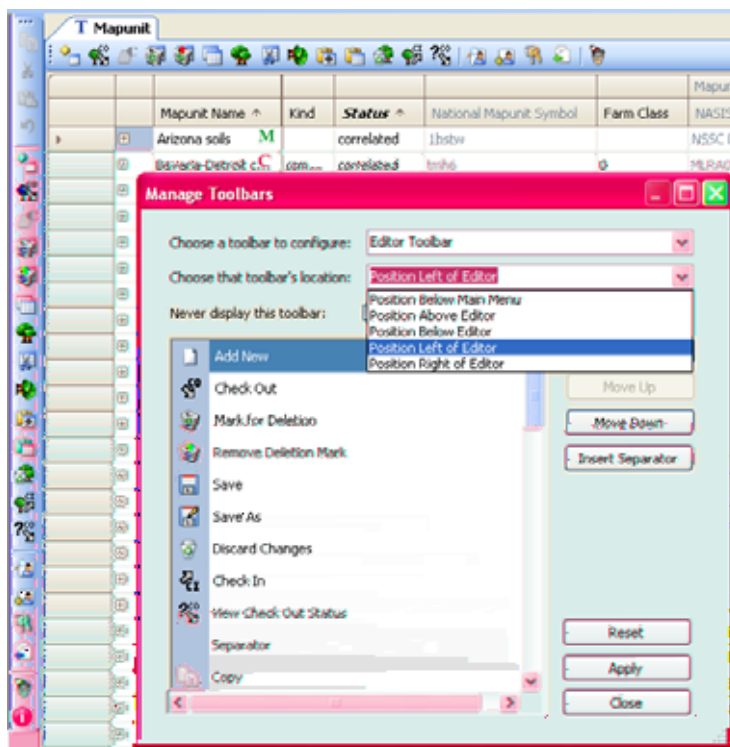
NASIS users have a number of options for managing and customizing NASIS toolbars. Toolbars can be hidden or docked in new locations within the application window and toolbar buttons can removed, added, and re-ordered. Choose the “Manage Toolbars”

item from the NASIS Menu or button from the NASIS Toolbar (see red arrow in the following graphic).



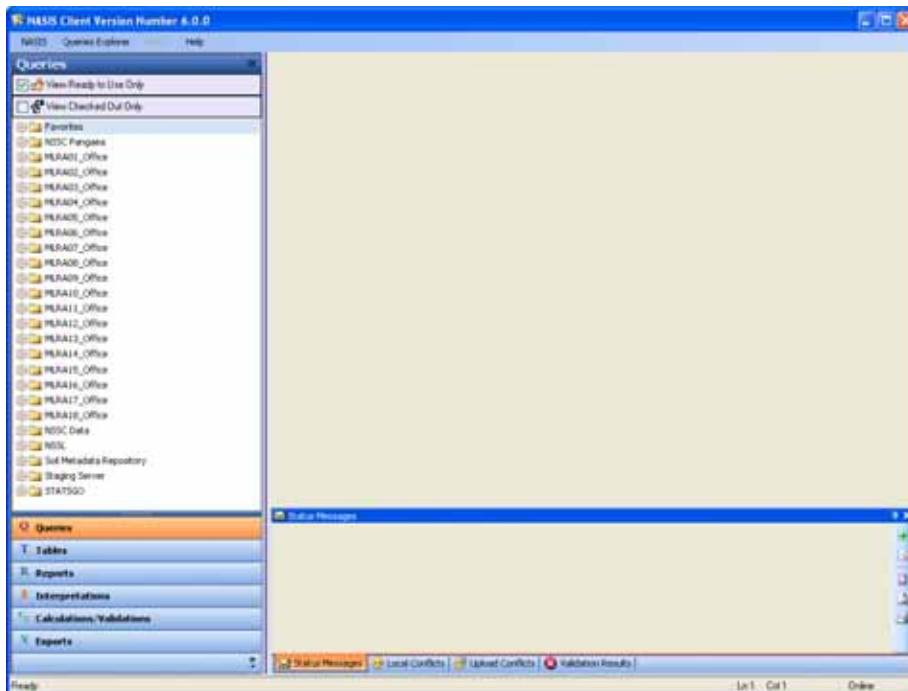
From the Manage Toolbars dialog box, select a toolbar to manage. The toolbar can be hidden (“Never display this toolbar”). The toolbar’s buttons can be hidden (“Hide Tool”) or rearranged (“Move Up” and “Move Down”).

NASIS User Guide



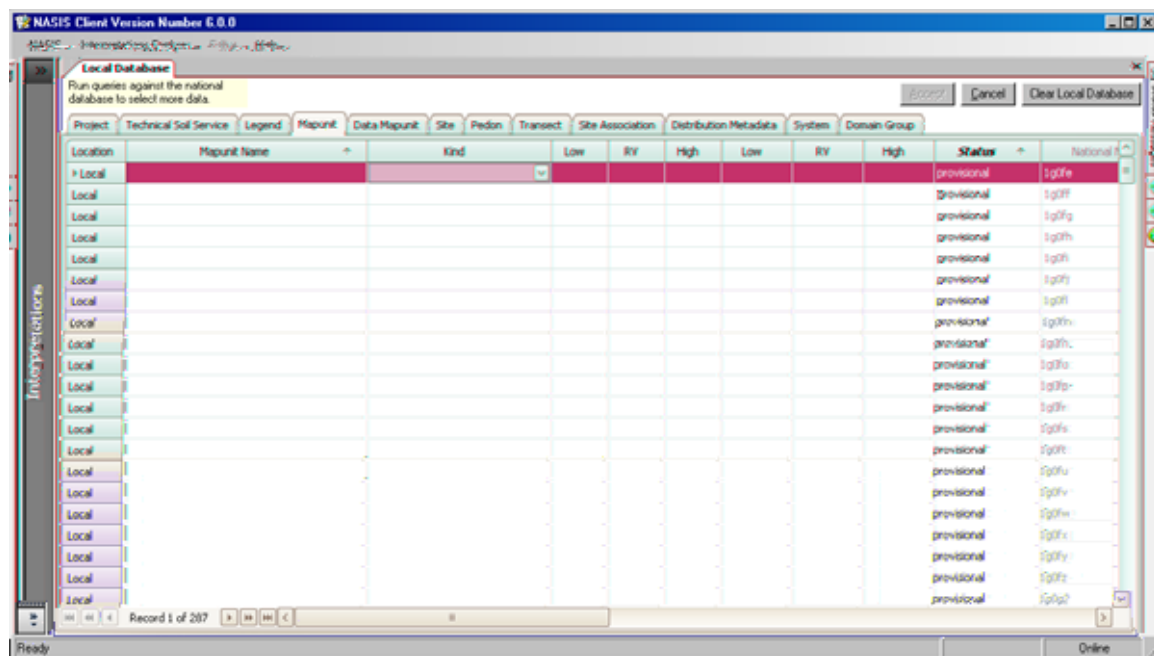
Finally, the toolbar can be docked in a different location (“Choose that toolbar’s location”).

Menus items are available for all Toolbar buttons. All toolbar actions are still available to the user when a toolbar is hidden. Hiding a toolbar can help increase the amount of screen available to the Explorer, Editor, and Message panels. If toolbar buttons are hidden, those actions are still available on from the menus. The following graphic shows the application window with the toolbars hidden.



NASIS User Guide

The following graphic shows the application window with the toolbars hidden, auto-hide turned on for the Explorer Panel, the Message Panel docked on the right side, and auto-hide turned on for the Message Panel.



This completes the “Working with NASIS Windows” chapter.

Chapter 3: Understanding NASIS Objects, Tables, and Elements

The first new concept in NASIS 6 is that it is now a client-server application. NASIS 6 software and local database resides on the local computer. Data must be queried from the National Database to populate the Local Database. In order to use data, this chapter will run queries against the national database in order to populate the local database and the selected set to explain the multiple objects and tables. Further information on building the selected set is available in Chapter 4. This chapter will explain the details of NASIS objects and the process of building the NASIS local database on the user's local computer.

NASIS Data Structure

Chapter 1 introduced the concept of objects and tables in NASIS. NASIS provides the capability to manage two general categories of soil survey data, commonly referred to as the Aggregated Data and the Point Data. The Aggregated Data structure includes a set of objects and related tables needed to document the soil map units and components and associate the map units with a soil survey area legend. The Legend/Map Unit/Data Mapunit Data Structure Diagram shows the objects and tables that make up the Aggregate Data.

The Point Data structure includes the objects and tables needed to manage the site and pedon descriptions collected in the field. The Site Association/Site/Pedon/Transect Data Structure Diagram shows the objects and tables associated with the Point data.

Downloadable versions of these data structure diagrams can be found on the NASIS web site (<http://soils.usda.gov/technical/nasis/documents/index.html>). The remainder of this chapter will focus on the Legend/Map Unit/Data Mapunit Data Structure and the NASIS Aggregated Data.

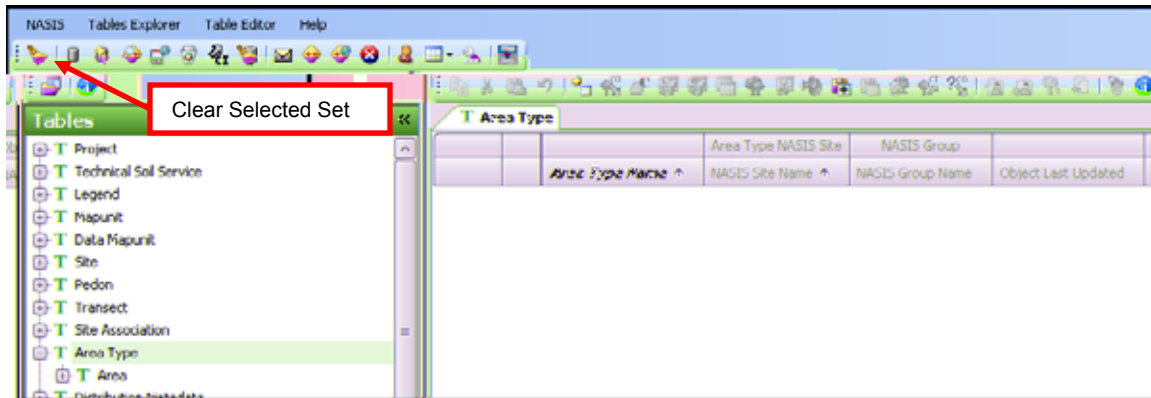
NASIS Aggregate Data

The major objects of the aggregated data are the “**Area Type**”, “**Legend**”, “**Mapunit**” and “**Data Mapunit**”. A new object has been introduced with the release of NASIS 6.0. The **Mapunit** Object contains the *mapunit* table that was previously contained within the Legend Object. The MLRA concept of updating soil surveys provided the impetus to move the mapunit table into a new object, thereby allowing a map unit to be shared across multiple legends. This move facilitates the seamless join of map units, with its unique national map unit symbol, across the country.

The Area Type Object

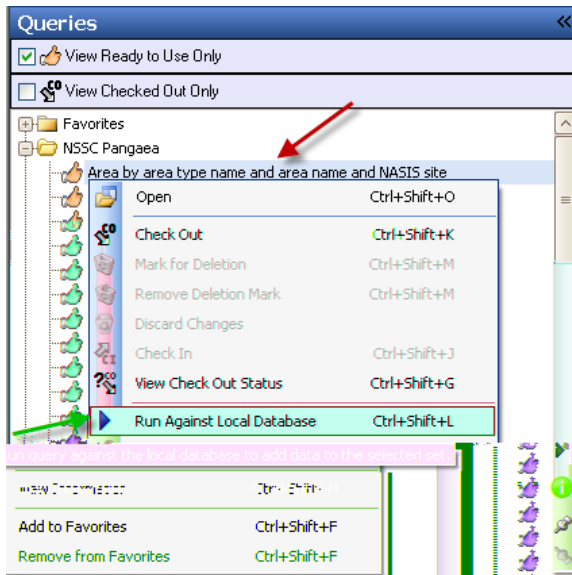
NASIS stores more than just traditional soil survey areas. Because there are several kinds of areas, they are organized by *area type*.

In the Tables Explorer, open the Area Type table by double-clicking on Area Type or highlighting the table and choosing Open on the Explorer menu or right click on the table and chose Open. The table should be empty, if not then clear the Selected Set using the whisk broom icon found on the NASIS toolbar or Clear Selected Set from the NASIS menu.



Querying Area Types

Choose the Query Explorer and right click on the national query named “Area by area type name and area name and NASIS Site” and **Run Against Local Database**:



NASIS User Guide

Selections for Running Query Area by area type name and area name and NASIS site

Target Tables: ☐ NASIS Site ☒ Area Type ☐ Area

Area Type Name: *

Area Name: *

NASIS Site Name: NSSC Pangaea

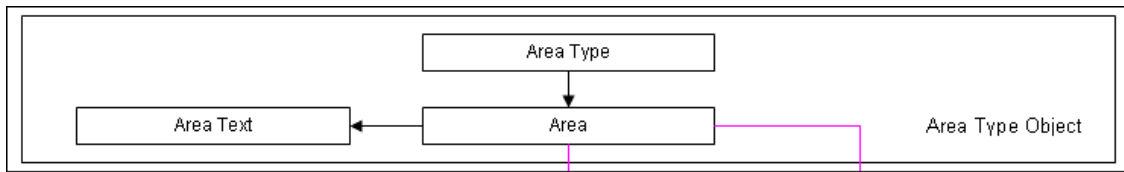
Run Cancel ☐ Check Out

Enter the parameters as presented in the image above –
Choose Area Type as the Target Table,
Enter an asterisk (*) for the Area Type Name and
Enter an asterisk (*) for the Area Name, and
Enter “NSSC Pangaea” as the NASIS Site name (or “*pan*”).

The data within the Area Type Object is loaded into the local database at the time of Initialization and is refreshed with changes when the “Refresh local database” is chosen.

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NASIS User Guide



The Area Type Object is comprised of three tables; the Area Type, Area and the Area Text tables. Navigate through the various Area Types to understand those contained in NASIS. Click on the plus sign (+) to the left of **Non-MLRA Soil Survey Area** to open the child tables and explore the various survey areas:

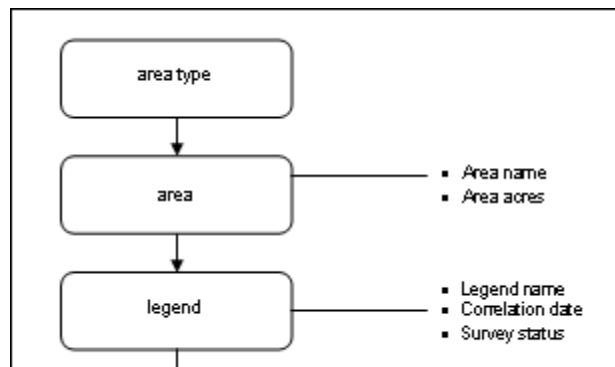
</

In the image above, the Area table and Area Text table is now displayed. Scroll to the right to identify the various columns within the tables. It shows the record associated with the *Non-MLRA Soil Survey Area Type*. The **Area Type** is the parent table and the **Area** is the child table. Also, the **Area Text** table is a child table to its parent **Area** table. These three tables create the **Area Type object**.

Continue to investigate the various Area Types, *however be advised that opening the two 7.5 and 15 min USGS Quadrangle Area Types will take a **very long time** to build the thousands of records into these tables.*

The Legend Object

The soil survey area is independent from the legend. The following illustration provides a visual explanation of the separation of area from legend.

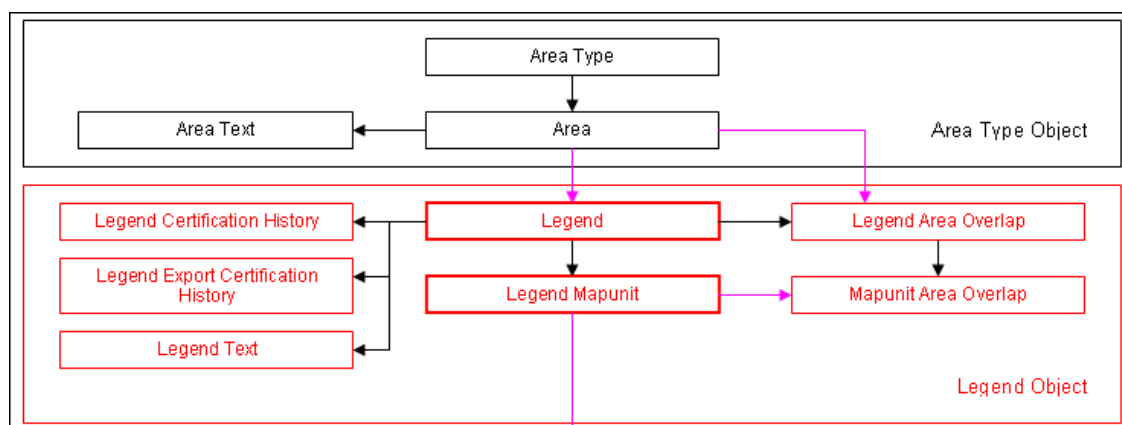


Separation of Soil Survey Area and Legend

One area can have multiple legends (a 1 to many relationship). For example, Pike County, Illinois can have both an out-of-date legend and an updated legend. Each legend, however, can be part of only one survey area (Pike County, Illinois). There are only two National Area Types in which legends are linked, the **Non-MLRA Soil Survey Area** and the **MLRA Soil Survey Areas**.

Because the area type object and the legend object are independent, navigating to the legend for a particular survey area requires a leap across object boundaries from the **Area** table to the **Legend** table, as shown in the following figure.

This figure below presents both the Area Type and the Legend Objects. Object boundaries are marked by the larger black line and larger red line rectangles. The purple lines between tables in the two objects indicate crossing points for moving from one object (Area Type) to another (Legend).

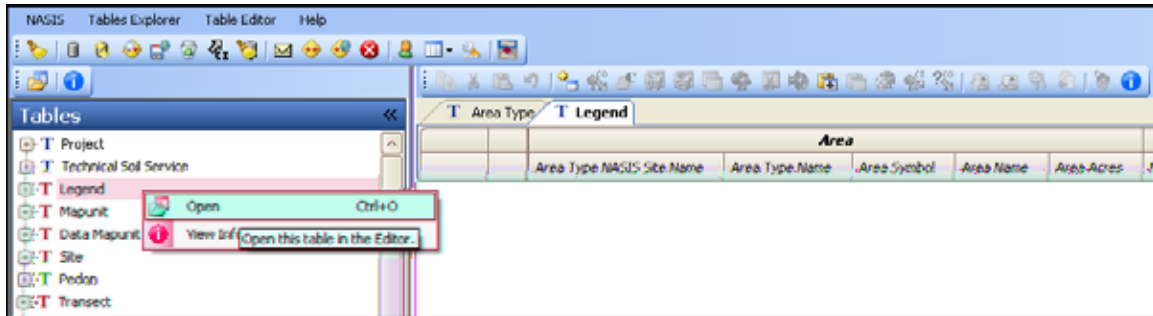


Legends are stored only for MLRA soil survey area and Non-MLRA soil survey area types.

NASIS User Guide

Locating object boundaries

In the Tables Explorer, open the **Legend** table.



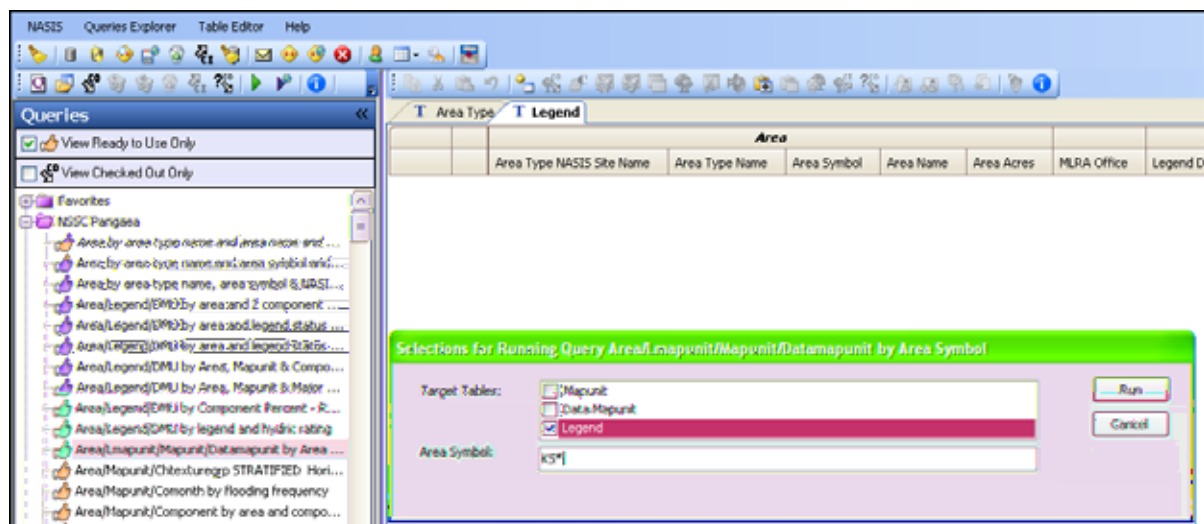
The table is empty because data was loaded into the Area Type Object but not into the Legend Object. The query was **Run Against the Local Database** to load the 20 national Area Types into the selected set. To load data into the Legend Object the data must be queried from the national database. Since Areas are independent of the Legend Objects, the Legends must be queried from the National Database to populate the Local Database and then queried from the Local Database into the Selected Set to view data in the Legend table.

A short digression is required to load the Local Database with data before proceeding with this chapter. This exercise will take about 30 minutes and will load the Local Database with data for future use.

NASIS User Guide

Using a query to load data from the national database

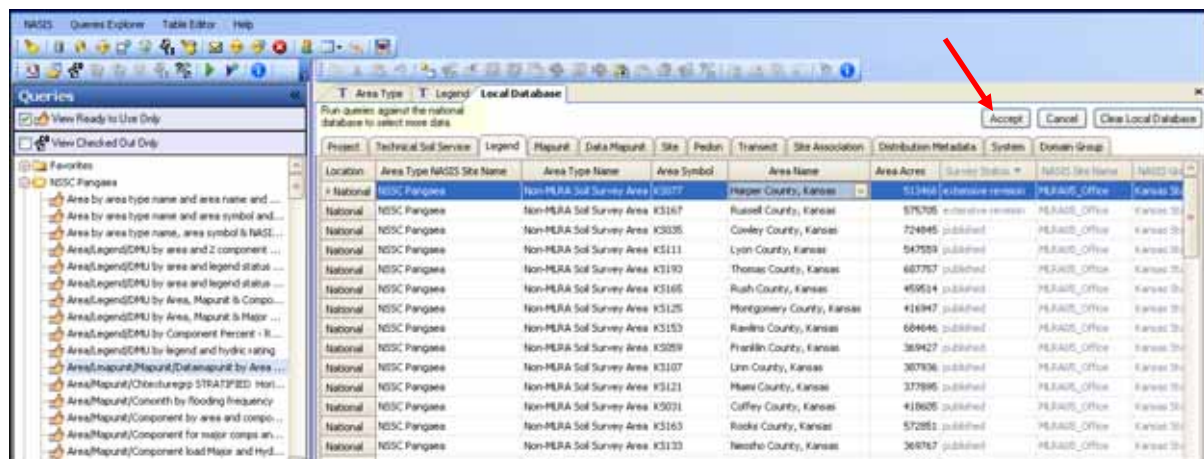
Select the National query: “Area/Lmapunit/Mapunit/Datamapunit by Area Symbol”. This query will be run using the option “Run Against National Database”.



Choose “Legend” as the target table. Only one Target Table is allowed for the national queries. Area Type is not an option since the Area Type object is preloaded into the Local Database.

Select the state of interest, in this example all of the legends in Kansas will be loaded using the two character state code with a wildcard “KS*”. Choose any state.

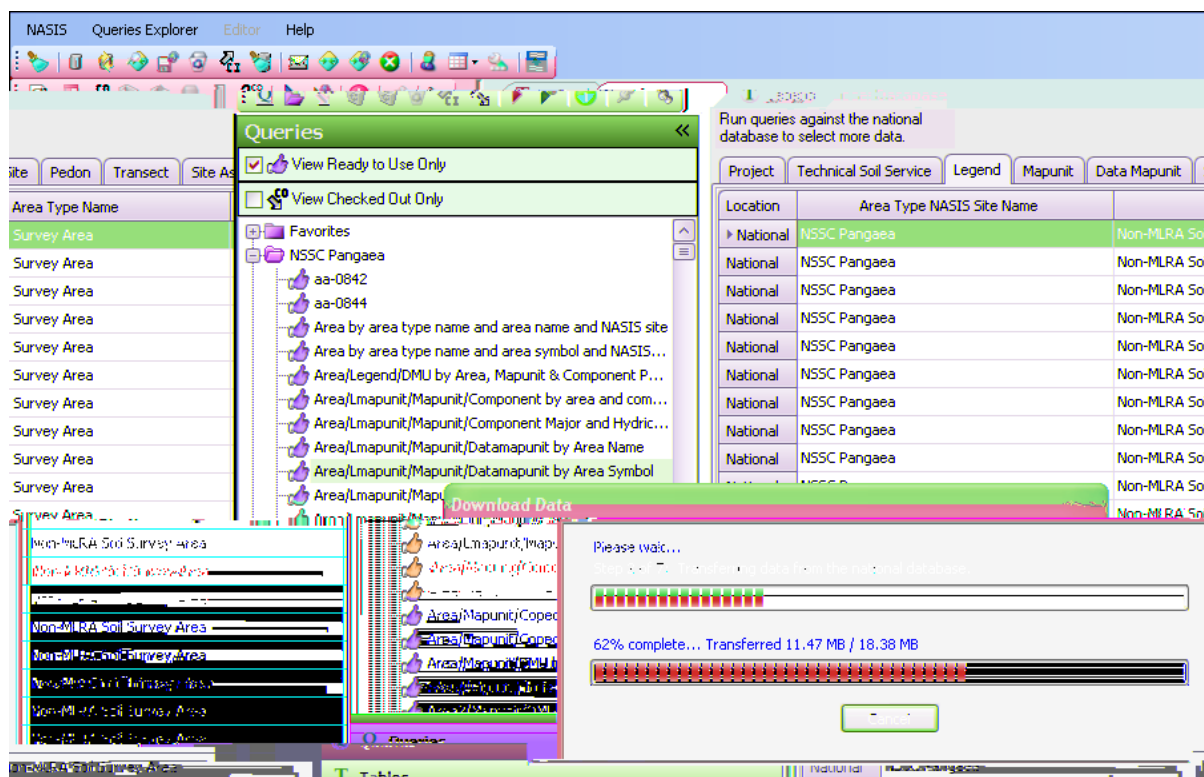
It will take approximately two minutes to run the query and display the selected surveys in the “Local Database Setup”.



Click on the “Accept” button to choose the selected data to download to the local database. This may take 30 minutes (25 mb) or more to download the data depending on the size of the dataset and the speed of the internet connection. This query will retrieve all the Legends, Mapunit, Datamapunits, linked Pedons and linked Sites for the selected state.

NASIS User Guide

Although a significant amount of time is used to download large datasets, the intent is to download this data once. The local database will be subsequently refreshed on a regular basis to retrieve any edits posted to the national database by other users.



Upon completion, the Status Messages panel will identify the data downloaded from the National database. The object tabs can be reviewed for data loaded into the local database.

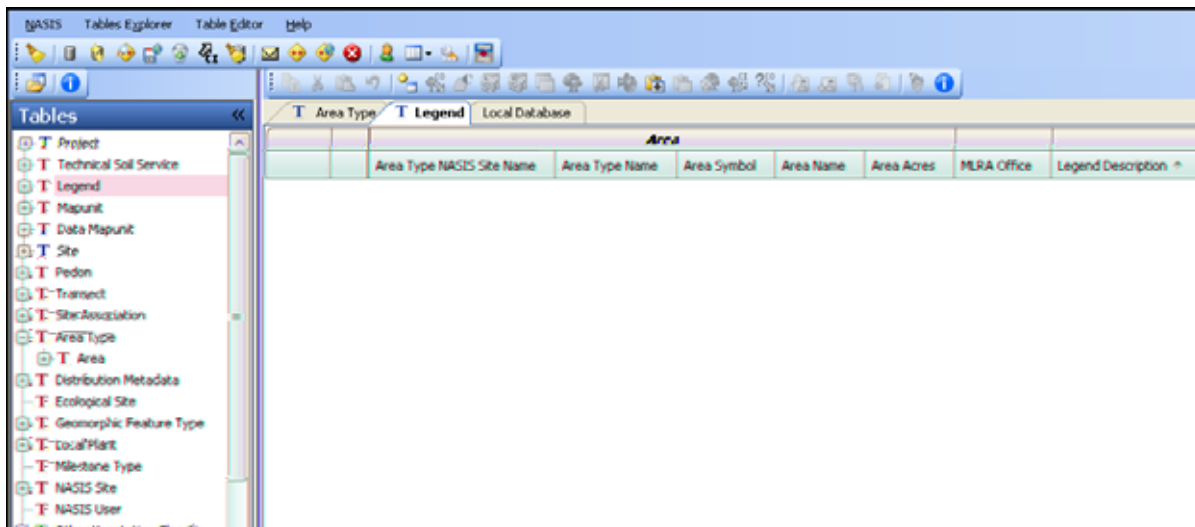
Local	NSSC Pangaea	Non-MLRA Soil Survey Area	KS193	Thomas County, Kansas	687757	published	MLRA05_Office	Kansas
Local	NSSC Pangaea	Non-MLRA Soil Survey Area	KS165	Rush County, Kansas	459514	published	MLRA05_Office	Kansas
Local	NSSC Pangaea	Non-MLRA Soil Survey Area	KS125	Montgomery County, Kansas	416947	published	MLRA05_Office	Kansas
Local	NSSC Pangaea	Non-MLRA Soil Survey Area	KS153	Rawlins County, Kansas	684646	published	MLRA05_Office	Kansas
Local	NSSC Pangaea	Non-MLRA Soil Survey Area	KS059	Franklin County, Kansas	369427	published	MLRA05_Office	Kansas
Local	NSSC Pangaea	Non-MLRA Soil Survey Area	KS107	Linn County, Kansas	387936	published	MLRA05_Office	Kansas
Local	NSSC Pangaea	Non-MLRA Soil Survey Area	KS121	Miami County, Kansas	377895	published	MLRA05_Office	Kansas
Local	NSSC Pangaea	Non-MLRA Soil Survey Area	KS031	Coffey County, Kansas	418605	published	MLRA05_Office	Kansas
Local	NSSC Pangaea	Non-MLRA Soil Survey Area	KS163	Rooks County, Kansas	572851	published	MLRA05_Office	Kansas
Local	NSSC Pangaea	Non-MLRA Soil Survey Area	KS133	Neosho County, Kansas	369767	published	MLRA05_Office	Kansas

Status Messages								
Number of rows loaded into Legend = 0								
Number of related rows loaded = 0								
Preparing query "Area/Lmapunit/Mapunit/Datamapunit by Area Symbol"...								
Running national query for target table "Legend"...								
Number of data objects found:								
Legend: 105								
Mapunit: 12993								
Data Mapunit: 4985								
Site: 848								
Pedon: 848								
Transect: 133								

NASIS User Guide

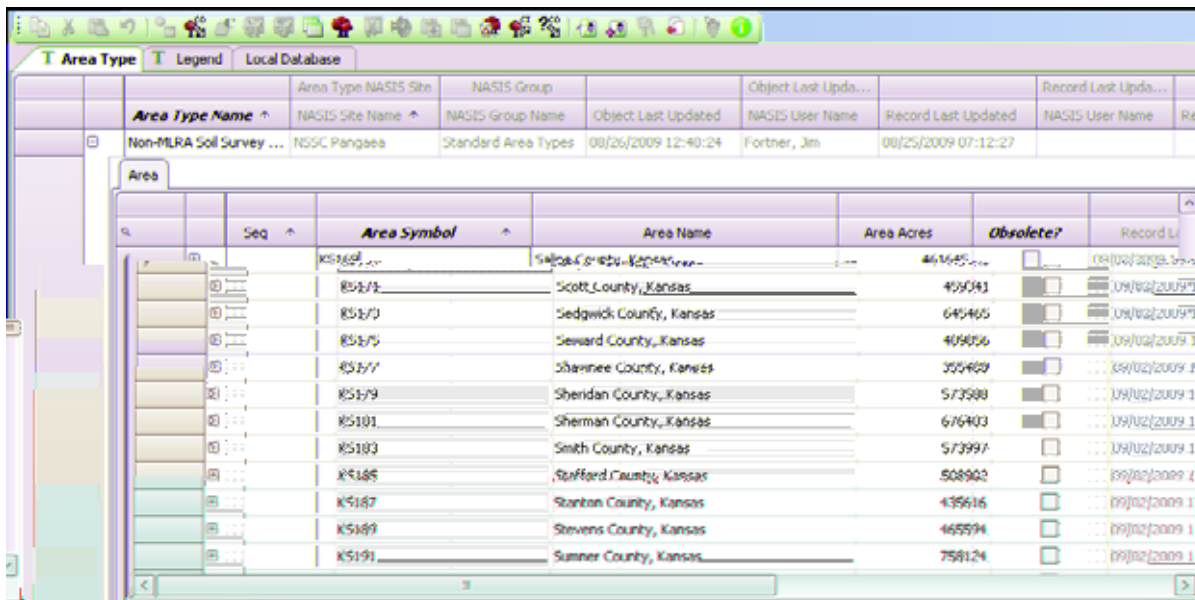
Loading the Legend table

Now that data is populated into the Local Database, return to the **Legend** table. As a reminder, the local database has now been populated with data. The Local Database must now be queried to populate the selected set – the Legend table.



Return to the Area Type tab and select an Area from the list within the Non-MLRA Soil Survey Area. For this exercise to work properly, the user must select an Area that was downloaded from the National Query and is available in the Local Database.

For this example, Saline County, Kansas has been selected:



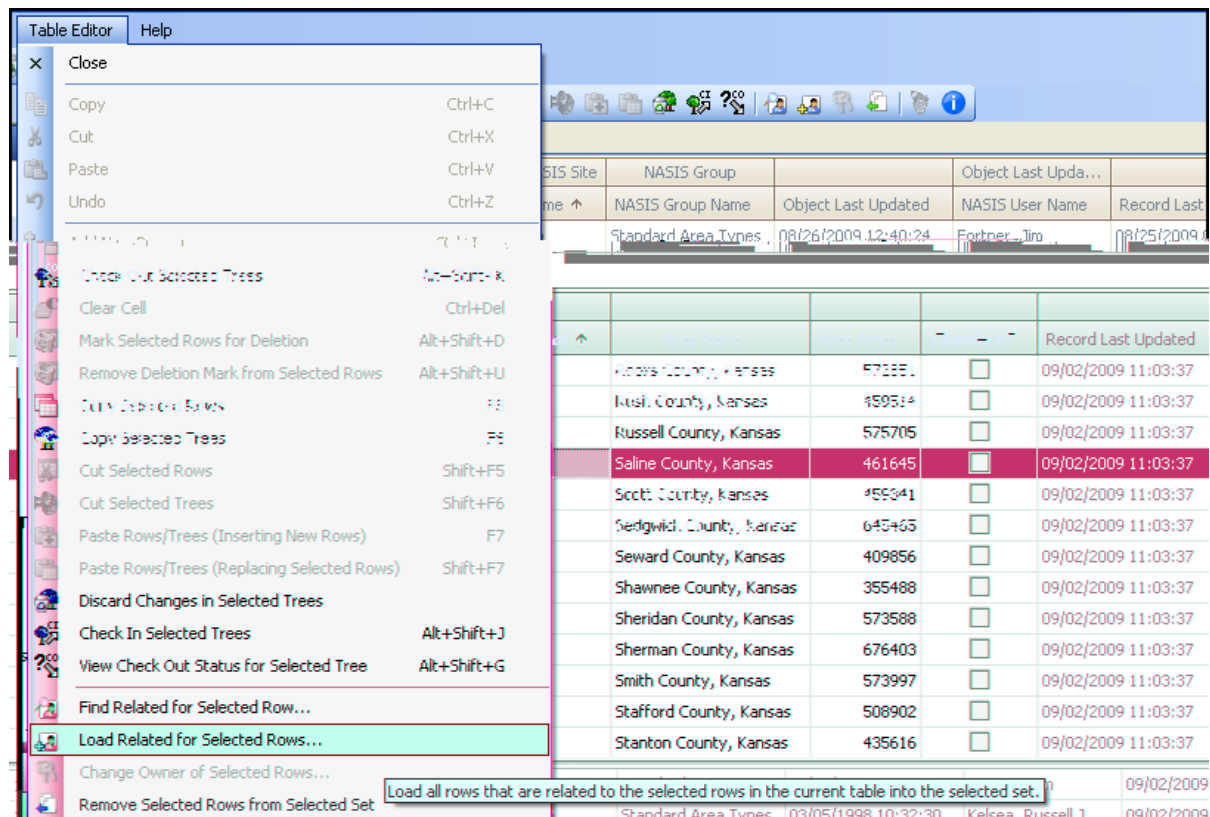
NASIS User Guide

Crossing from area table to legend table

Returning to the explanation of data base objects, the next step is to populate the selected set. There are two methods of loading the **Legend** data for Saline County, Kansas “Non-MLRA Soil Survey Area”. Either:

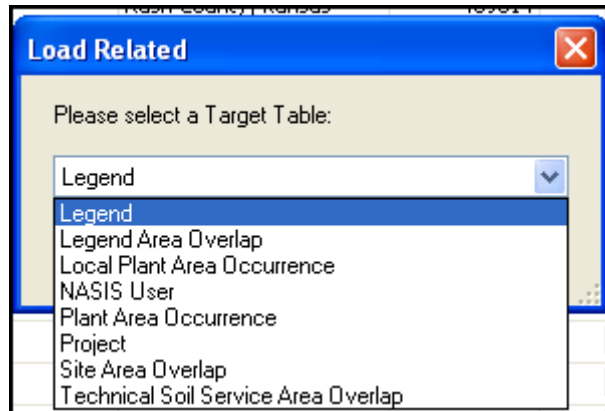
1. Run a query – “Run Against the Local Database”, or
2. Use the “Load Related for Selected Rows”.

For this exercise the “Load Related for Selected Rows” will be used. In this example, the KS169 “Saline County, Kansas” row is highlighted and from the Table Editor menu the “Load Related for Selected Rows” is chosen:

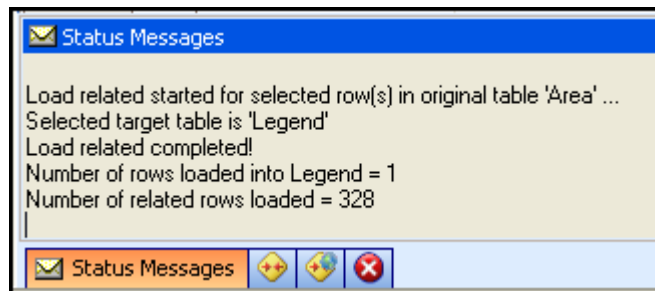


NASIS User Guide

A choice list box will appear containing those tables that are related to the Area table. For this example choose the “Legend” table.



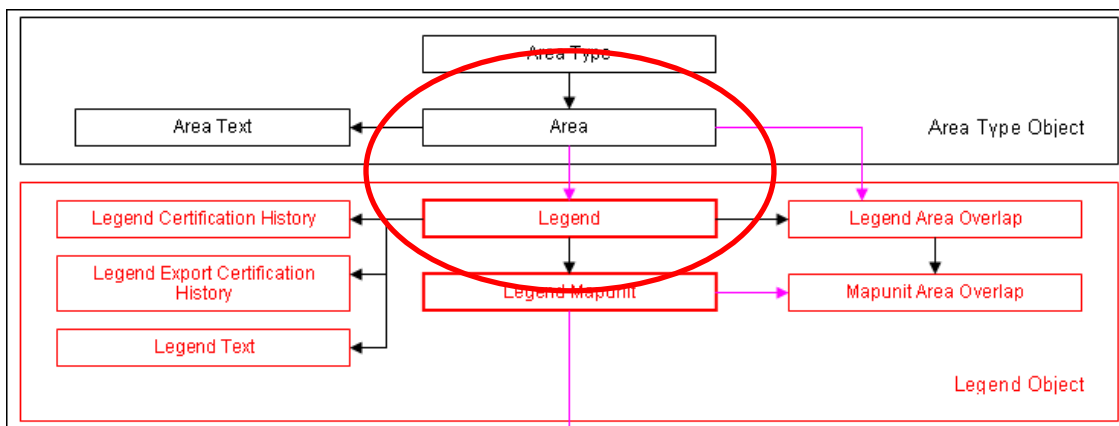
The Status Messages panel will identify the data loaded from the local database into the selected set for the Legend table:



NASIS User Guide

To review this process:

1. The data in the Area Type object is preloaded into the *Local Database* at the time of the database “initialization”.
2. A query was “Run Against Local Database” to load the national Area Types into the *selected set*.
3. A query was “Run Against National Database” to download a state dataset to populate the local database.
4. Returning to the Area Type table, the Non-MLRA Soil Survey Area table was opened, a survey from the list was highlighted and the “Load Related for Selected Rows” command was used to load the Legend that is related to the chosen Area.
5. A second method would be to run the same query using “Run Against Local Database” to populate Legend data into the selected set.
6. This example crosses the Area Type Object and the Legend Object by loading the Legend(s) for the selected Area.



Return to the Legend table tab. The **Legend** table is now populated with the Saline County, Kansas Non-MLRA Soil Survey Area (or whichever legend the user has chosen). Using the Load Related function, the Area Type Object and the Legend Object has been “crossed”.

The screenshot shows the NASIS software interface with the Legend table selected. The table has columns for Area Type NASIS Site Name, Area Type Name, Area Symbol, Area Name, Area Acres, and MLRA Office. The data row shows NSSC Pangaea, Non-MLRA Soil Survey Area, KS169, Saline County, Kansas, 461645, and salina, ks.

Area					
Area Type NASIS Site Name	Area Type Name	Area Symbol	Area Name	Area Acres	MLRA Office
NSSC Pangaea	Non-MLRA Soil Survey Area	KS169	Saline County, Kansas	461645	salina, ks

NASIS User Guide

Open the Legend child tables by clicking on the plus (+) sign on the left side of the row in the Legend table or by “double-clicking” on the space to the left of the plus (+) sign.

T Area Type		T Legend		Local Database					
Area									
Area Type NASIS Site Name		Area Type Name		Area Symbol	Area Name	Area Acres	MLRA Office	Legend Description +	Survey Status +
NSSC Pangaea		Non-MLRA Soil Survey Area		KS169	Saline County, Kansas	461645	salina, ks	Detailed Soil Map Legend	published
Legend Mapunit		Legend Area Overlap		Legend Certification History		Legend Export Certification History		Legend Text	
Mapunit									
Unit Status		Record Last Updated		Seq	Mapunit Symbol	Total Acres	National Mapunit Symbol	Mapunit Name +	Map
onal					Ba	4045	12hr	BAVARIA-DETROIT COMPLEX, RARELY FLOODED	addi
lated					3250	4045	tmh6	Bavaria-Detroit complex, rarely flooded	corre
onal					1138R	241	12p	BRIDGEPORT SILT LOAM, RARELY FLOODED	addi
lated					2310	241	tmh7	Bridgeport silt loam, rarely flooded	corre
onal					Cd	2173	12hs	CASS FINE SANDY LOAM, OCCASIONALLY FLOO...	addi
lated					3521	2176	tmh8	Cass fine sandy loam, occasionally flooded	corre
onal					Ce	8659	12ht	CLIME SILTY CLAY LOAM, 2 TO 6 PERCENT SLOPES	addi
lated					4555	8441	tmh9	Cline silty clay loam, 3 to 7 percent slopes	corre
onal					113CM	48	12iu	CLIME SILTY CLAY, 3 TO 6 PERCENT SLOPES	addi
lated					4530	48	tmh10	Cline silty clay, 3 to 6 percent slopes	corre
onal					Co	6429	12hu	COZAD SILT LOAM, 0 TO 2 PERCENT SLOPES, RA...	addi
lated					3720	6429	tmh11	Cozad silt loam, rarely flooded	corre

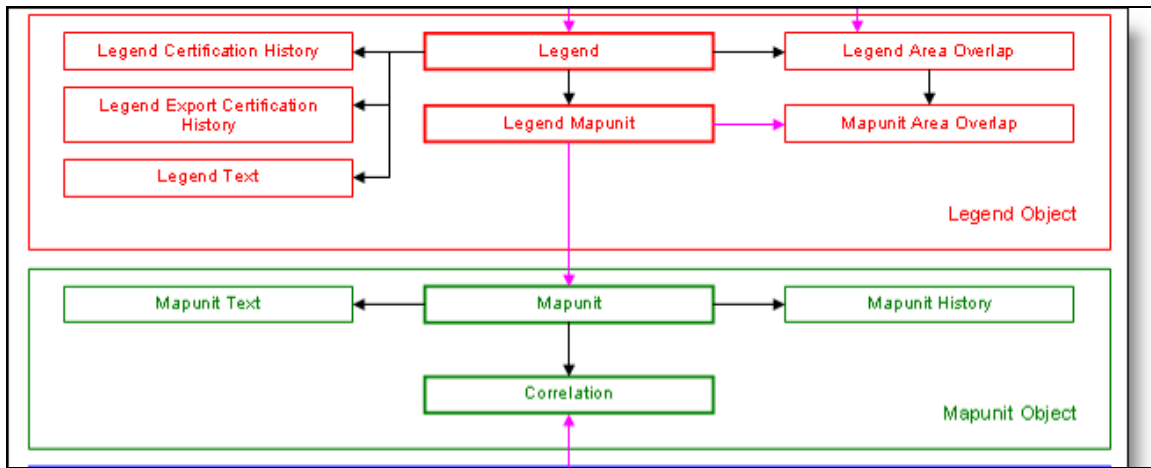
The Legend Object, displayed above, contains the child tables used to manage the map units within the specific soil survey area legend. In a later lesson the columns of the tables in the Legend Object will be examined. This lesson focuses exclusively on navigating objects and understanding the NASIS structure.

Examine each column in the Legend table scrolling to the right to view all columns. The Legend table stores the legend description, geographic applicability, and certification status. Remember from Chapter 2 to use the View Information button to obtain information about any table or data element. The two fields “survey status” and “correlation date” are now obsolete fields and no longer available for editing. The update of soil surveys has focused the emphasis from the status of “Legends” to the status of “Mapunits”.

The Mapunit Object

The Area Type Object has been loaded and reviewed.
The Legend Object has had a survey loaded and reviewed.

The Mapunit Object is a new object in NASIS 6.0. The Mapunit Object was created to manage map units across multiple survey legends. The boundaries between these independent objects will be crossed using the Load Related command to load data into the Mapunit Object.

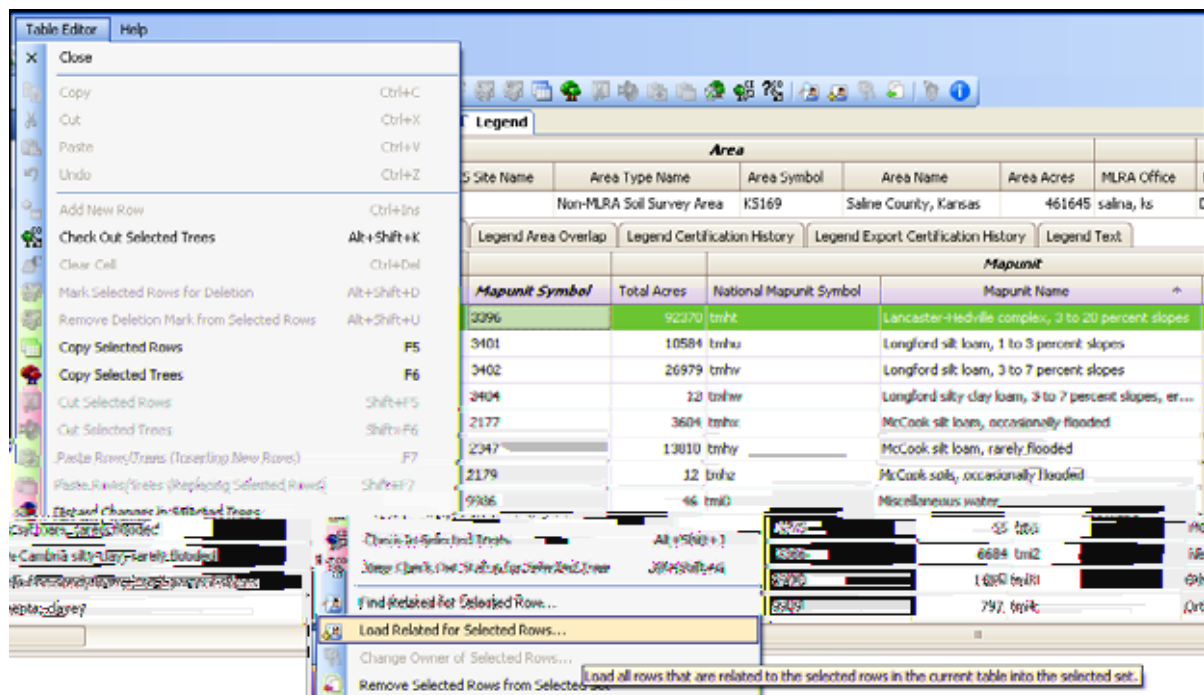


Crossing Between Legend, Mapunit, and Data Mapunit Objects

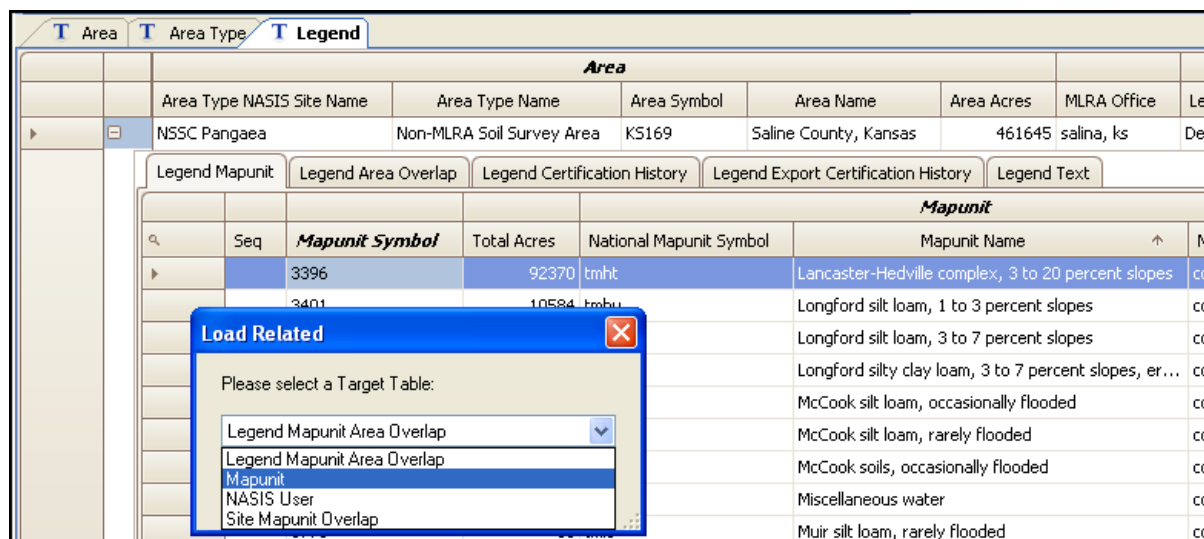
The Mapunit Object manages the map unit providing the map unit documentation and the links to the map unit data. Return to NASIS to load data into the Mapunit Object from a selection in the Legend Object.

NASIS User Guide

In this step, in the Legend Mapunit table, the “Lancaster-Hedville complex, 3 to 20 percent slopes” mapunit is highlighted and the “Load Related for Selected Rows” is chosen from the Table Editor menu.



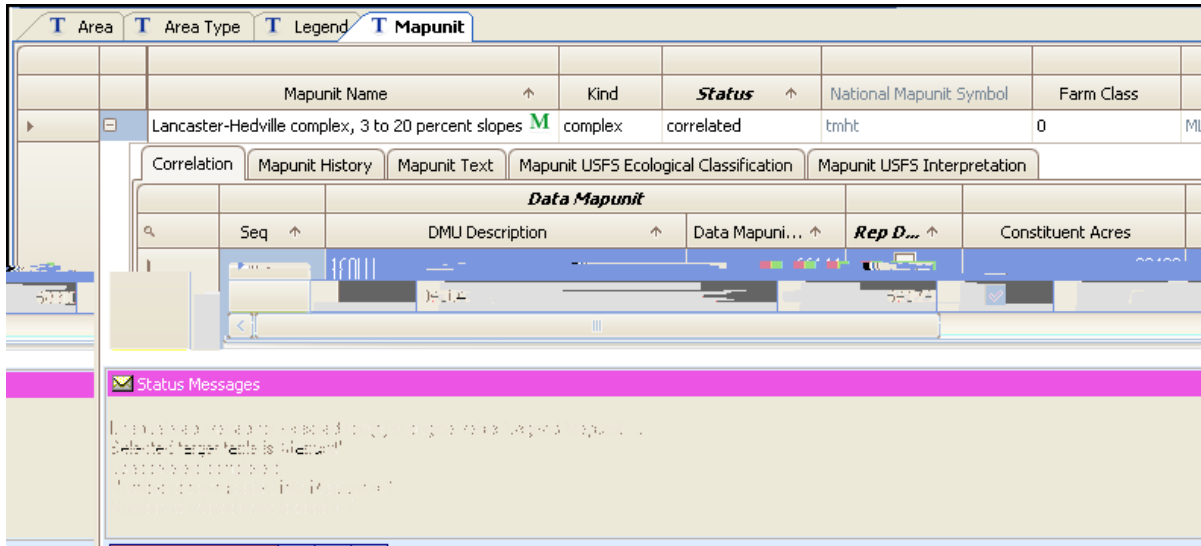
The Mapunit table is chosen from the parameter choice list:



This loads the specific map unit into the “selected set”.

NASIS User Guide

The next step is to view the map unit. The Mapunit table is opened from the Explorer menu and the Mapunit Object (parent and child tables) is viewed beginning with the Mapunit table:



The screenshot displays the NASIS software interface. At the top, there are tabs for 'Area', 'Area Type', 'Legend', and 'Mapunit'. The 'Mapunit' tab is selected. Below the tabs, a table lists mapunits. The first row is highlighted, showing details for 'Lancaster-Hedville complex, 3 to 20 percent slopes'. Below this table, there are buttons for 'Correlation', 'Mapunit History', 'Mapunit Text', 'Mapunit USFS Ecological Classification', and 'Mapunit USFS Interpretation'. A 'Data Mapunit' table is also visible, with columns for 'Seq', 'DMU Description', 'Data Mapuni...', 'Rep D...', and 'Constituent Acres'. At the bottom, a 'Status Messages' window shows a message about a deleted target table.

Mapunit Name	Kind	Status	National Mapunit Symbol	Farm Class
Lancaster-Hedville complex, 3 to 20 percent slopes	complex	correlated	tmht	0

Seq	DMU Description	Data Mapuni...	Rep D...	Constituent Acres
-----	-----------------	----------------	----------	-------------------

Review the data contained within the mapunit table and its various child tables. There are five child tables:

The Correlation table contains the links to the mapunits' data.

The Mapunit History table documents the map unit's correlation events.

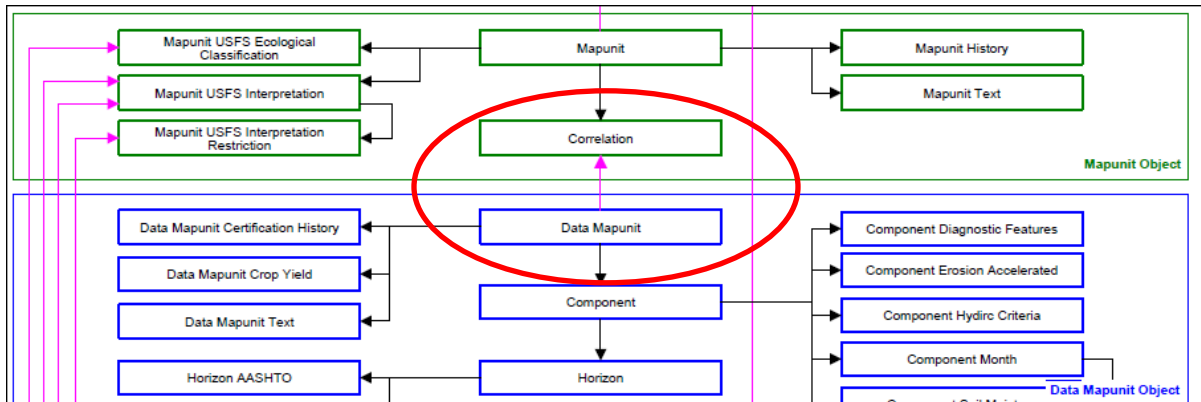
The Mapunit Text stores documentation on the map unit.

The two USFS tables are designed for future use.

The Data Mapunit Object

The Area Type Object has been loaded and reviewed.
 The Legend Object has had a survey loaded and reviewed.
 The Mapunit Object has had a mapunit loaded and reviewed.

The Data Mapunit Object is designed to capture the soil properties, qualities and interpretations for each component within the map unit concept. The boundaries between these independent objects will be crossed using the Load Related command to load data into the Data Mapunit Object.



Returning to NASIS, in the Correlation table, notice that one record is designated a representative data mapunit (Rep DMU) and one is not designated by the check mark in the “Rep DMU” column.

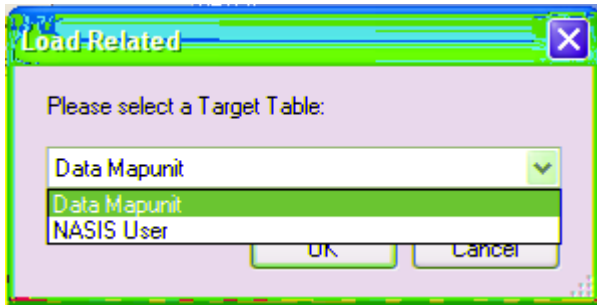
Mapunit Name	Kind	Status	National
Lancaster-Hedville complex, 3 to 20 percent slopes	M complex	correlated	tmht

Seq	DMU Description	Data Mapuni...	Rep DMU
041LA		64179	<input checked="" type="checkbox"/>
169LH		66144	<input type="checkbox"/>

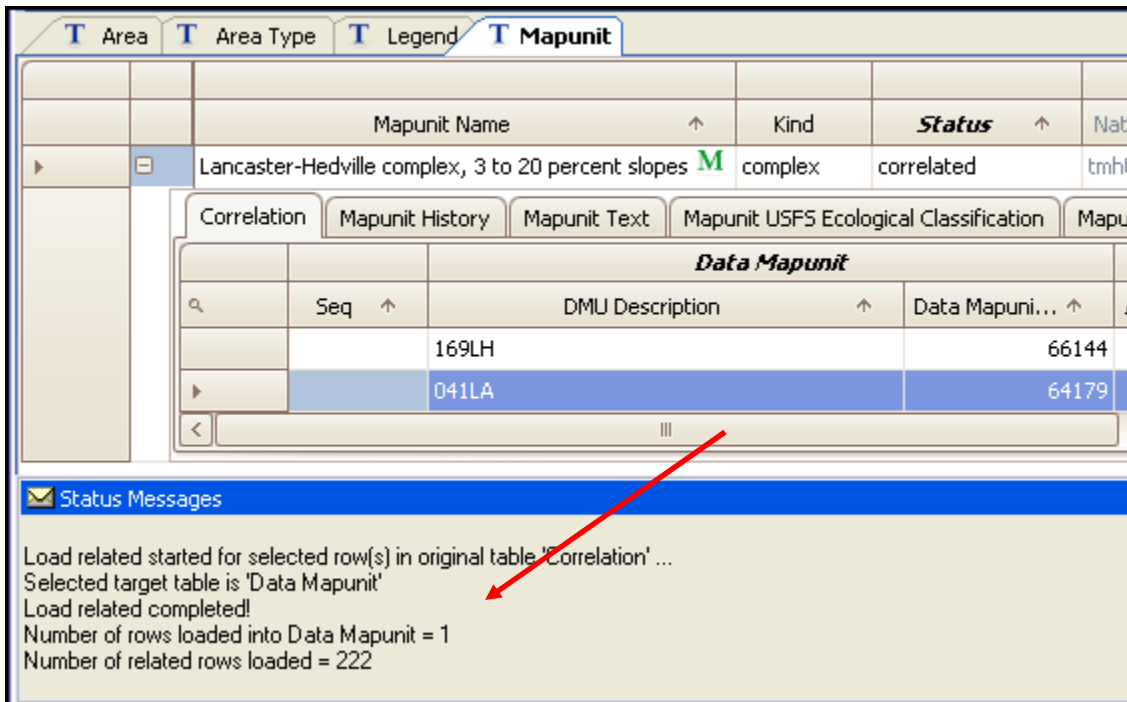
Highlight the row designated as the representative data mapunit.
 Choose the Editor Toolbar icon “Load Related for Selected Rows” or from the Table Editor menu.

NASIS User Guide

The choice list appears. Select Data Mapunit.



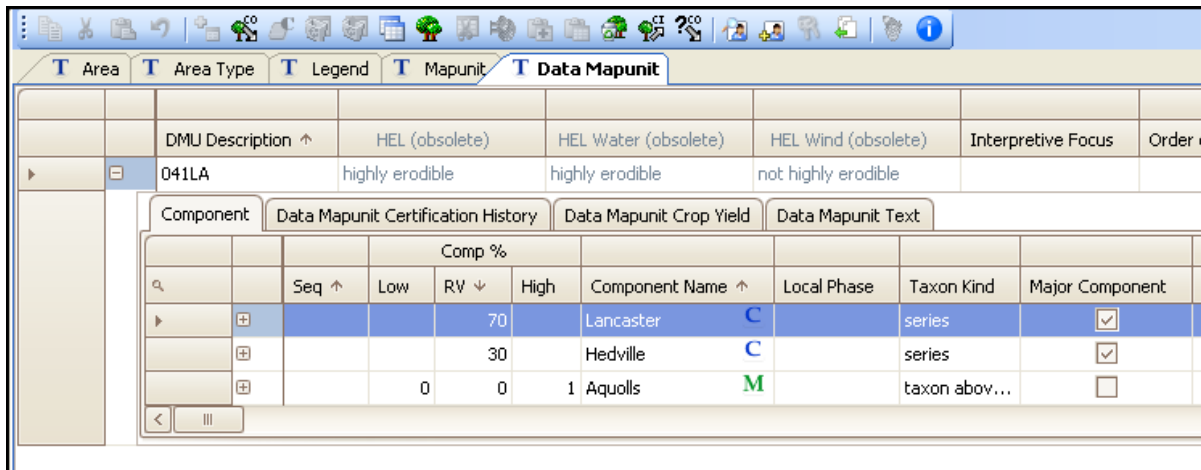
A message appears in the message panel indicating that one row was added to the selected set. An additional 222 related rows are also added to the selected set.



This process loads the specific DMU into the "Selected Set". The data is available and now must be viewed.

NASIS User Guide

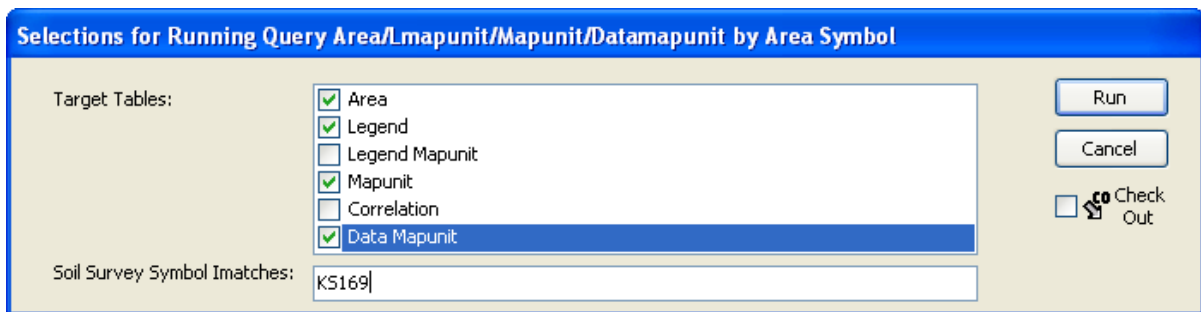
To review the data open the Data Mapunit table from the Tables Explorer. Review the child tables associated with the Data Mapunit Object.



The screenshot shows the NASIS Tables Explorer interface. The 'Data Mapunit' table is selected, and its child tables are displayed below it. The child tables include 'Component', 'Data Mapunit Certification History', 'Data Mapunit Crop Yield', and 'Data Mapunit Text'. The 'Component' table is expanded, showing a list of components with columns for 'Seq', 'Low', 'RV', 'High', 'Component Name', 'Local Phase', 'Taxon Kind', and 'Major Component'.

Seq	Low	RV	High	Component Name	Local Phase	Taxon Kind	Major Component
70				Lancaster	C	series	<input checked="" type="checkbox"/>
30				Hedville	C	series	<input checked="" type="checkbox"/>
0	0	0	1	Aquolls	M	taxon abov...	<input type="checkbox"/>

NOTE: This entire exercise could have been completed by loading all data using a single query and choosing the appropriate Target Tables:



The dialog box titled 'Selections for Running Query Area/Lmapunit/Mapunit/Datamapunit by Area Symbol' contains a list of target tables and a text field for the soil survey symbol matches.

Target Tables:

- ☒ Area
- ☒ Legend
- ☐ Legend Mapunit
- ☒ Mapunit
- ☐ Correlation
- ☒ Data Mapunit

Soil Survey Symbol Matches: KS169

Buttons: Run, Cancel, Check Out

Using this query would load all data associated with the specific survey area. The purpose of this exercise was to show the method of using the "Load Related" command. "Load Related" allowed the loading of specific rows of data.

Summary:

The database manages tables using “Objects” which are used to group tables of similar data. There is independence between the database objects. This independence allows objects to be linked to one another.

- A Data Mapunit stores the soil properties, qualities and interpretations for a given map unit concept.
- A Data Mapunit can be linked to multiple Mapunits (or a single map unit).
- A Mapunit can be linked to multiple Legends (or a single legend).
- A Legend is linked to only one Area.

The information in the Area Type Object is downloaded to the Local Database upon database initialization.

The National Database must be queried to populate the Local Database with the Legend, Mapunit and Data Mapunit information.

The Local Database is then queried to populate the Selected Set.

The Selected Set is used to view, analyze, edit and report soils information.

The Load Related command on either the Table Editor menu or the icon on the Table Toolbar can be used to load data from one database object into another database object.

Chapter 4: Building the Selected Set

Client-Server Application

Before the user can view, edit, or report on the data in the NASIS database, the user must deliberately select a group of records from the permanent database (server) and add them into the local database stored on their personal computer (client). The user will then query the local database to place that group of records into temporary edit tables, commonly referred to as the “selected set”.

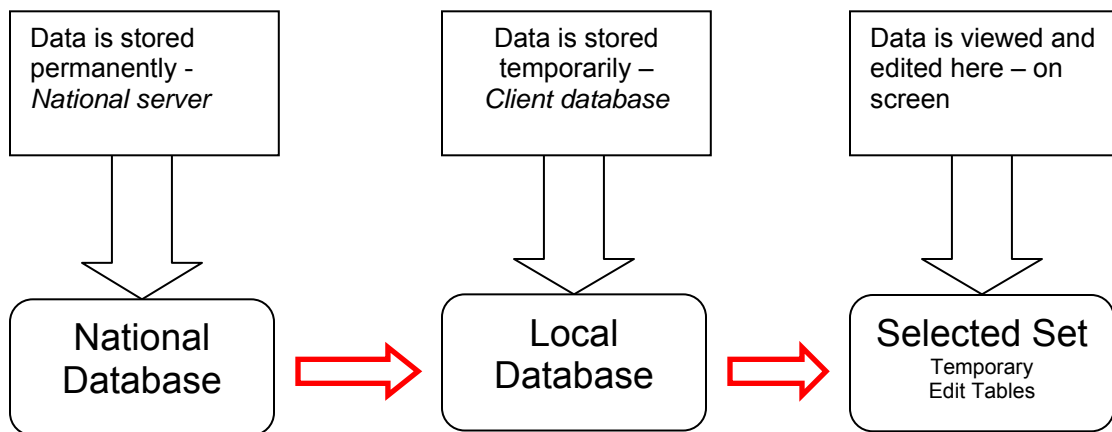


Figure 4-1: The new Client/Server concept includes three “databases”

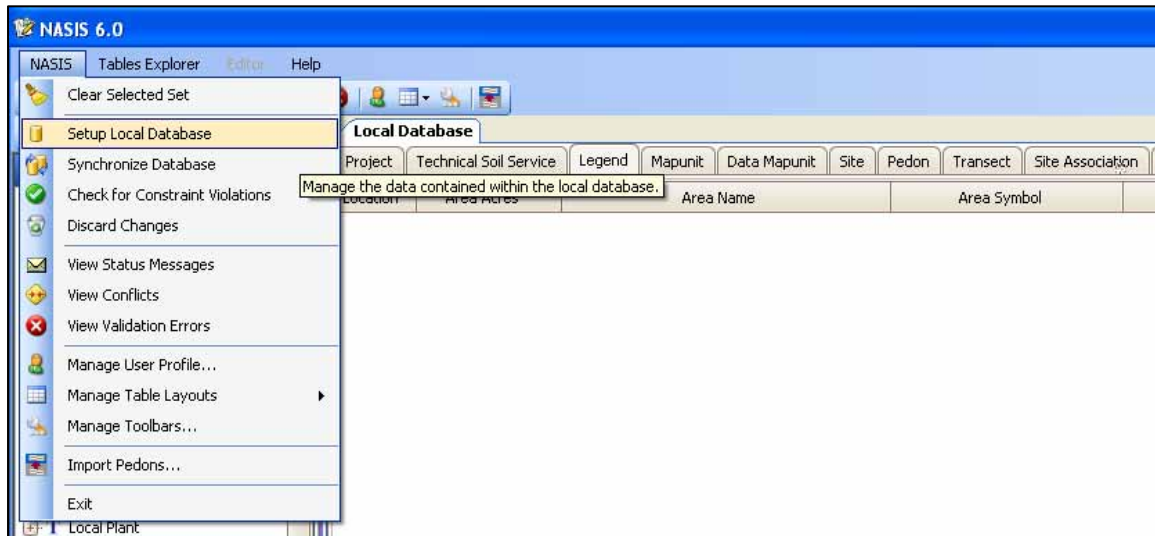
When NASIS is started for the first time, the “*Local database*” and the “*selected set*” are empty. Data must be queried and retrieved from the national database to populate the client’s local database.

NOTE: When the database is initialized, there are many tables that are populated on each client. The initial data includes all Area Types, Queries, Reports, Interpretations, Calculations/Validations and the NASIS Site tables.

NASIS User Guide

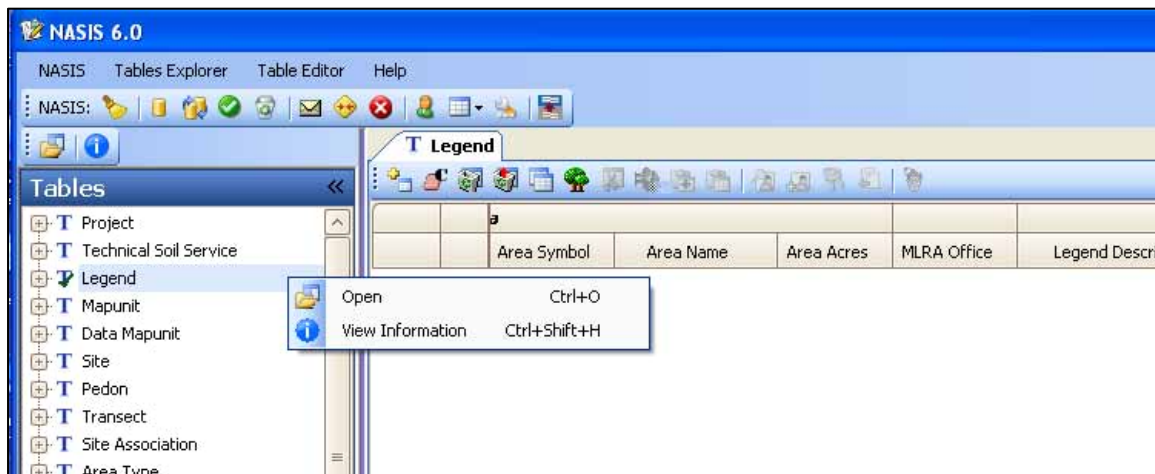
The empty **Local Database** can be verified by:

Select the menu option “**NASIS**” and select “**Setup Local Database**”. This command allows the user to view the data contained in the Local Database. It will open the Local Database Setup allowing the user to view the data that resides in the local database. The parent tables within each database object are displayed. These tables will be empty when NASIS is first opened or if the Local Database has been cleared.



The empty **selected set** can be verified by:

Since no data is contained in the Local Database, it only makes sense that no data appears in the Selected Set. However, to verify: Select “**Tables**” in the Explorer Panel and then select a table. Using the Tables Explorer menu, (or the right click menu) select “**Open**” to open the **Legend** table in the Editor Panel. The table that will appear in the Editor Panel will be empty.



Queries Explorer

The Queries Explorer manages queries. Before any work can begin in NASIS 6, data must be retrieved from the national database to populate the local database. Data must then be loaded from the local database into the selected set. The primary method of population is to run a query, as shown below.

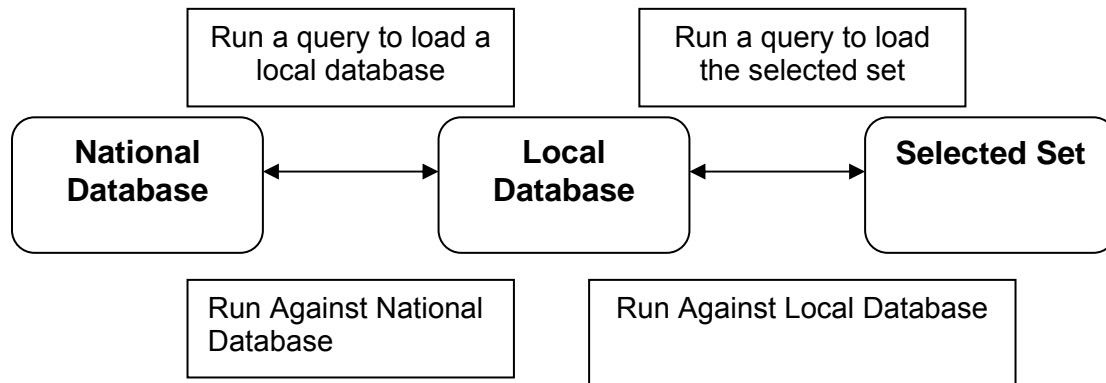
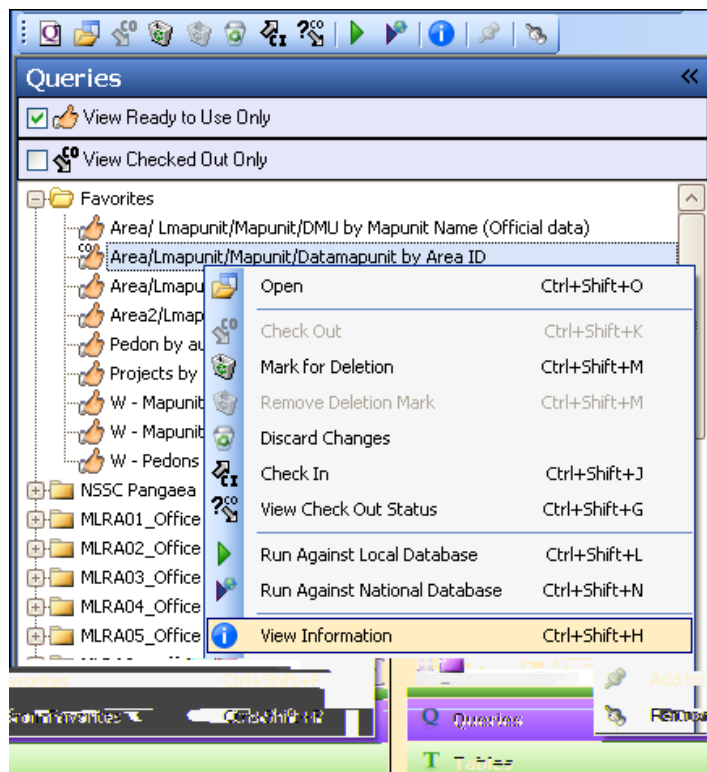


Figure 4-2. Process of Editing and Saving Data

The NASIS Queries Explorer provides the user the ability to create or run Structured Query Language scripts to load data from either the national database or the local database. The NASIS Site is opened by clicking on the plus sign to the left of site name. The Queries Explorer is organized by NASIS Sites. Opening this “tree” provides access to those queries written by the members of that particular site.



The addition of the “Favorites” folder provides the user the ability to sift through all the queries in any NASIS site and to add preferred queries to the users’ “Favorites” list.

The Queries Explorer allows the user to filter the queries based on those reports that are set “Ready for Use” (thumbs up or not ready to use: “thumbs down”) or those queries the user has “Checked Out” (the ^{co} in the upper left corner of the report name – see Area/Lmapunit/Mapunit/Datamapunit ...).

The Queries Explorer allows the user create and edit queries. It is also used to run a query either Against the

National Database (to populate the local database) or Against the Local Database (to

build the selected set). The right click menu provides the same tools to check out the query, delete or undelete, discard changes, Check edits In, Run Against Local Database or Run Against National Database, to view information on the query object, or to add or remove the query to/from the favorites. These same menu functions are available on the Queries Explorer menu.

Selected Set Process Steps

The process steps to build a selected set are:

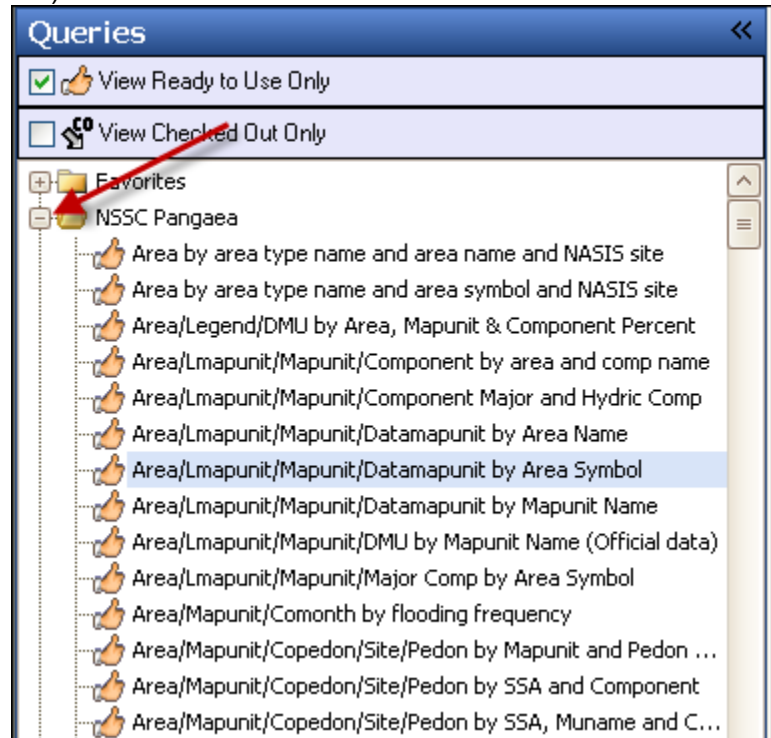
1. Identify an appropriate query from the **“Queries Explorer Panel”**.
2. The query will be run using the menu option **“Run Against the National Database”**.
3. Only one Target Table is allowed on a national “run”, therefore choose the highest level table as the Target Table. When a query is **“Run Against National Database”** the query will download all data linked to that Target Table. This will be explained in more detail later in this document.
4. The “Setup Local Database” screen will appear. All queried data will be assigned the Location of **“National”**. The user will make the decision to **“Accept”**, **“Cancel”** or **“Clear Local Database”**. If the user chooses “

3.(S421)Tj/TT2

Querying the National Database

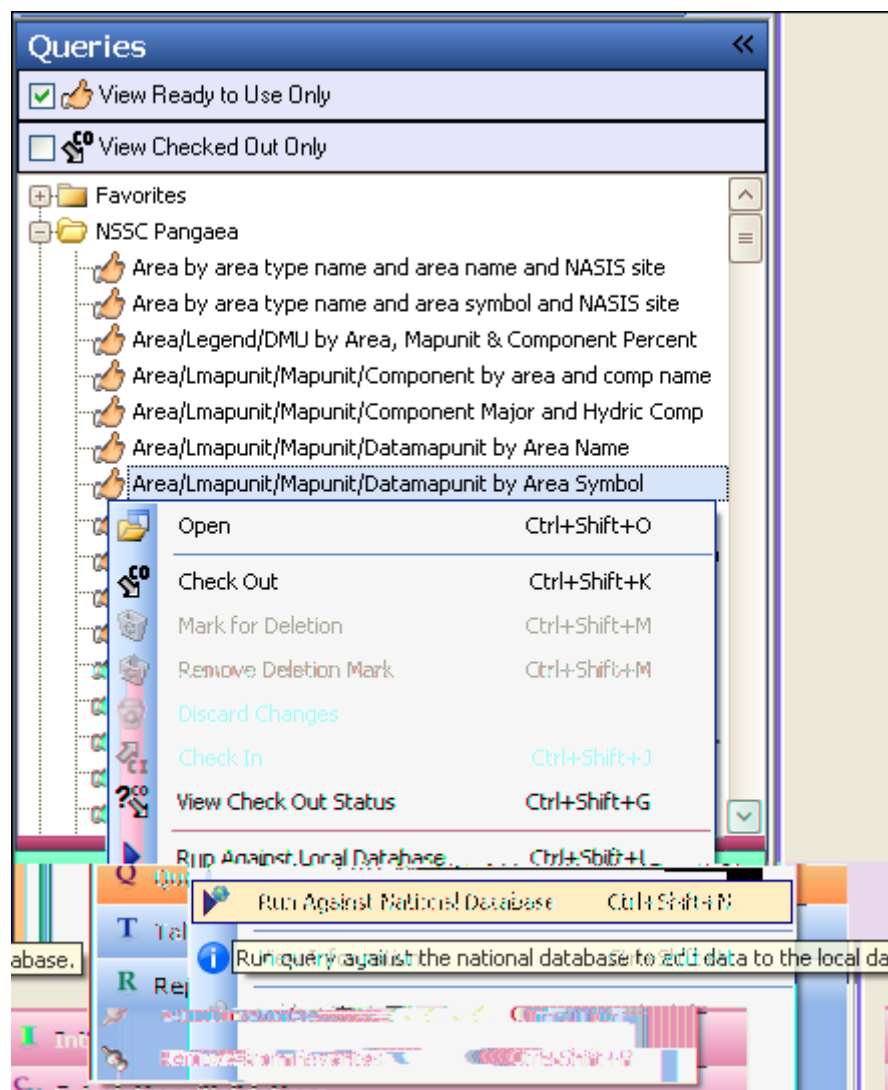
NASIS has prewritten queries (as well as the capability of writing custom queries). This section is designed to explain how to use a prewritten query to load data from the “national database” into the selected set. Queries are grouped by NASIS Site. Any Query can be added to the personal “Favorites” query list simply by highlighting the query, right clicking and choosing “Add to Favorites” or from the Query toolbar choose the pushpin icon. This was covered in the previous section.

1. In the **Queries Explorer** panel, open the “NSSC Pangaea” NASIS Site (or the “Favorites” folder if previously added) by clicking on the “+” plus sign on the left (the red arrow).



NASIS User Guide

2. In the **Queries Explorer** panel, select and highlight the query named **“Area/Lmapunit/Mapunit/Datamapunit by Area Symbol”**. This scenario is designed to retrieve and populate the Local Database with all the data associated with a specific Soil Survey Area ID number.



3. Using the right click menu, choose the **“Run Against National Database”**. (Chapter 2 explains the various menus and toolbars.)
4. The query parameter box will appear. In the **“Target Tables”** field, highlight the **Legend** table by clicking in the small box to the left.

Only one Target Table is allowed when querying the national database. In most instances it will be necessary to use the highest level object as the Target Table. Target Tables were explained in Chapter 1. Running a query against the national database will retrieve the requested Target Table along with all linked data (e.g. map units, data mapunits, pedons, sites, etc.)

NASIS User Guide

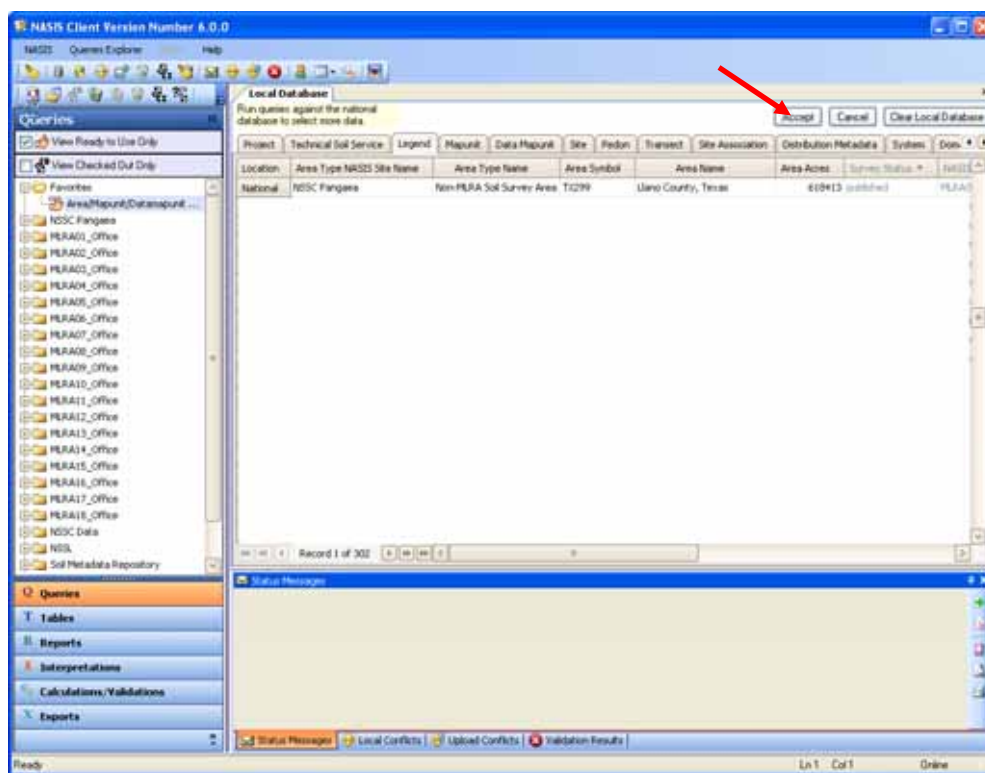
Selections for Running Query Area/Lmapunit/Mapunit/Datamapunit by Area Symbol

Target Tables: ☒ Legend ☐ Mapunit ☐ Data Mapunit

Soil Survey Symbol Imatches: TX299

Run Cancel

5. For this example, the Area Symbol “**TX299**” is being used.
6. Run the query by clicking on the **Run** button.
 - a. The NASIS Query Parameters dialog box appears. It allows the user to fill in a value for each parameter when the query is run.
 - b. The NASIS Query Parameters dialog box is the means by which the user can specify values when the query is run. The parameter allows the user to use a wildcard, (* or ?).
7. The eAuthentication window may appear requesting to log in to the NASIS6 system. Upon completion of the query, the “Local Database Setup” window appears and identifies the data that is available to download from the national server. Note the row is designated as “National” in the **Location** column.



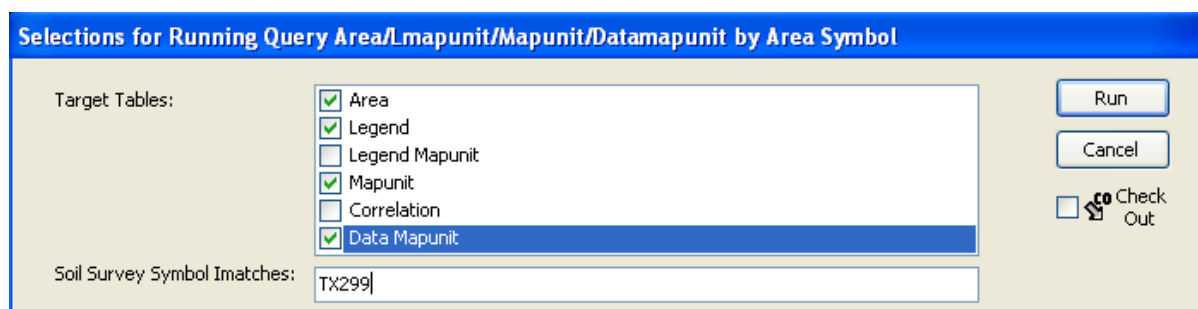
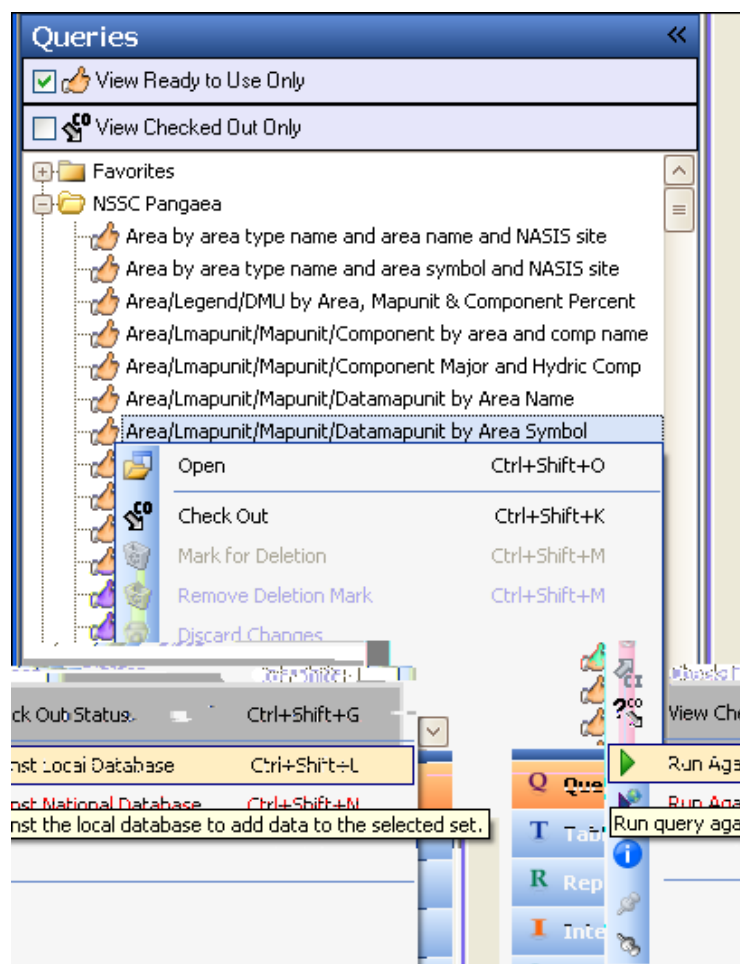
8. Using the left mouse button, click **Accept**. The message panel informs the user that the data were added to the “Local Database”. The “Local Database” now

NASIS User Guide

contains a copy of the data in the permanent database, not the permanent data itself.

Querying the Local Database

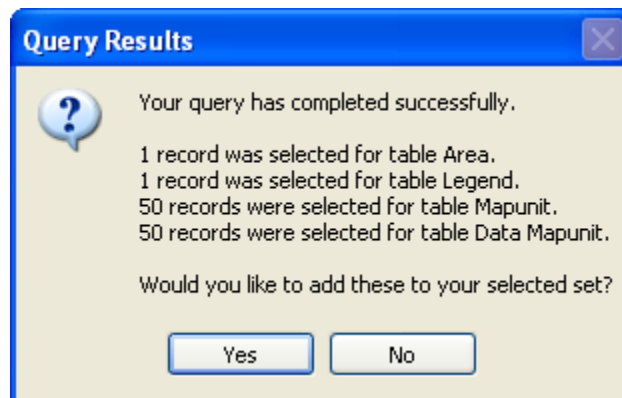
9. To load the data into the “Selected Set”, return to the same query and this time choose to “**Run Against Local Database**”.



10. The query parameter box will appear, once again. Notice the difference in the Target Table choices between a National run versus a Local run. In the “**Target Tables**” field, highlight the **Area, Legend Mapunit, Mapunit, and Datamapunit** tables by clicking in the small box to the left. To load the “Selected Set”, the choice of the Target Table is dependent on the user needs. In this instance all the data will be loaded into the selected set.

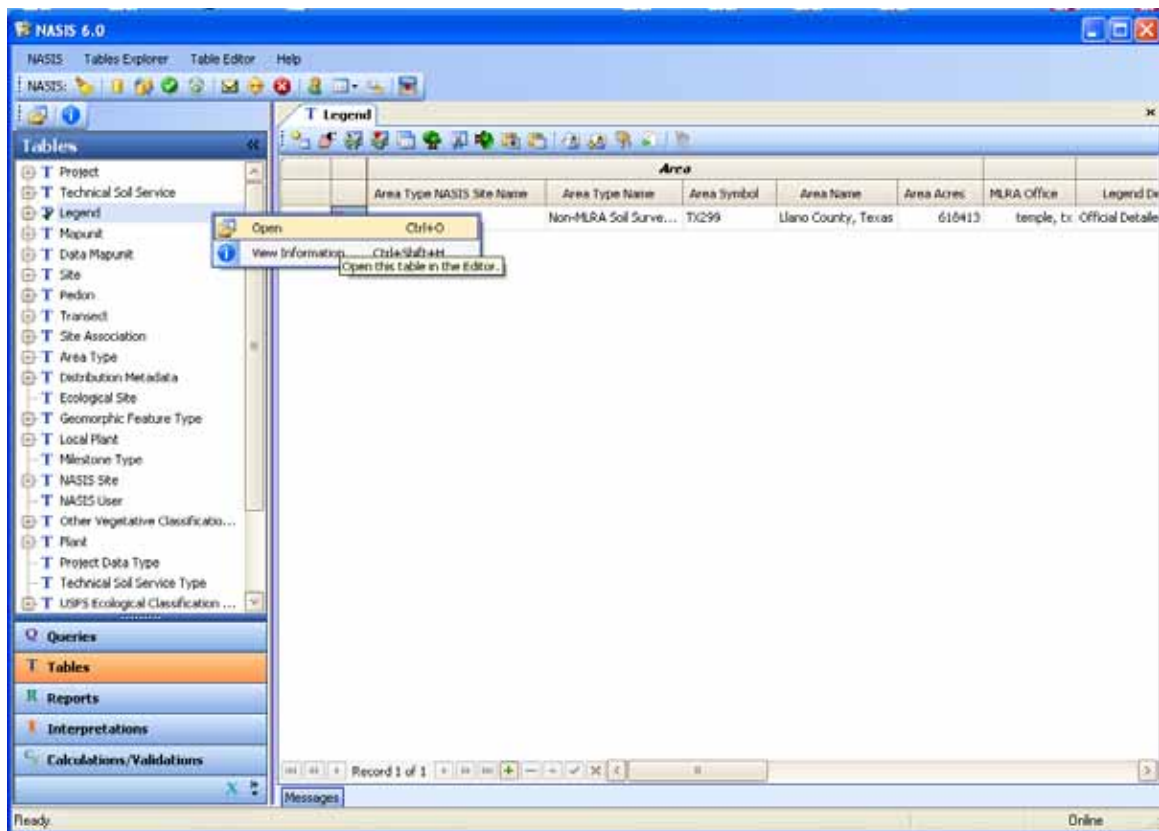
Note: There is a “Check Out” box below the Cancel button. The Local Database and Selected Set data is “Read Only”. Data must be checked out prior to editing. This check box provides the user the ability to load and edit this data once it appears in the selected set. This box may be checked to “check out” all the data but this may take a fairly long time. It is preferable not to use this button in most cases but rather wait until the selected set is filtered to check out specific records.

11. The “Query Results” dialog box will appear detailing the data that is loaded into the Selected Set. Select “**Yes**” to add these to the selected set.

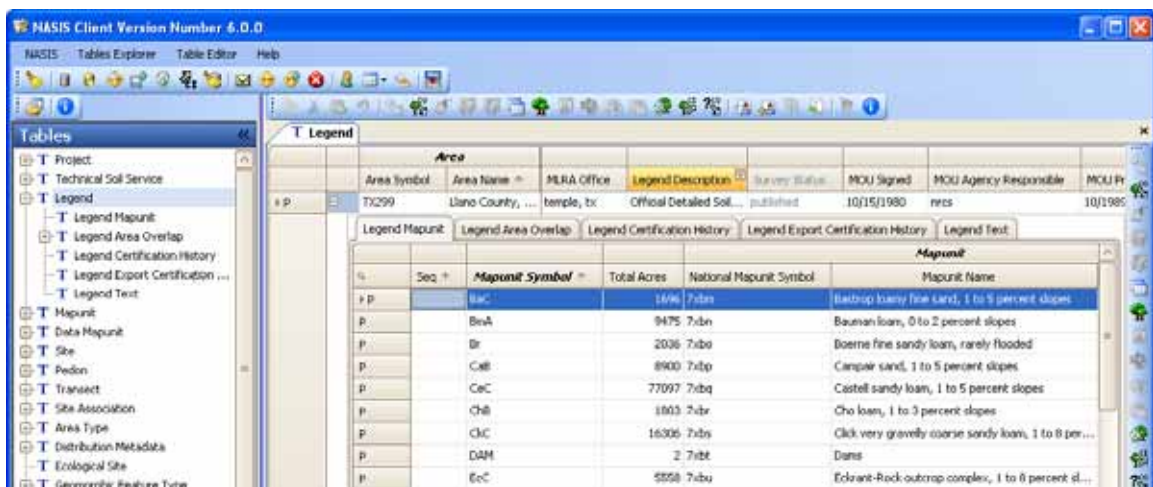


12. In order to view the data, the table must be opened in the “Editor Panel”. This is accomplished by choosing the “**Tables Explorer**”, locate the table, and then, if necessary, expand the list of tables by clicking on the plus sign (+) next to the parent table. In this example, the **Legend** table will be opened.

NASIS User Guide

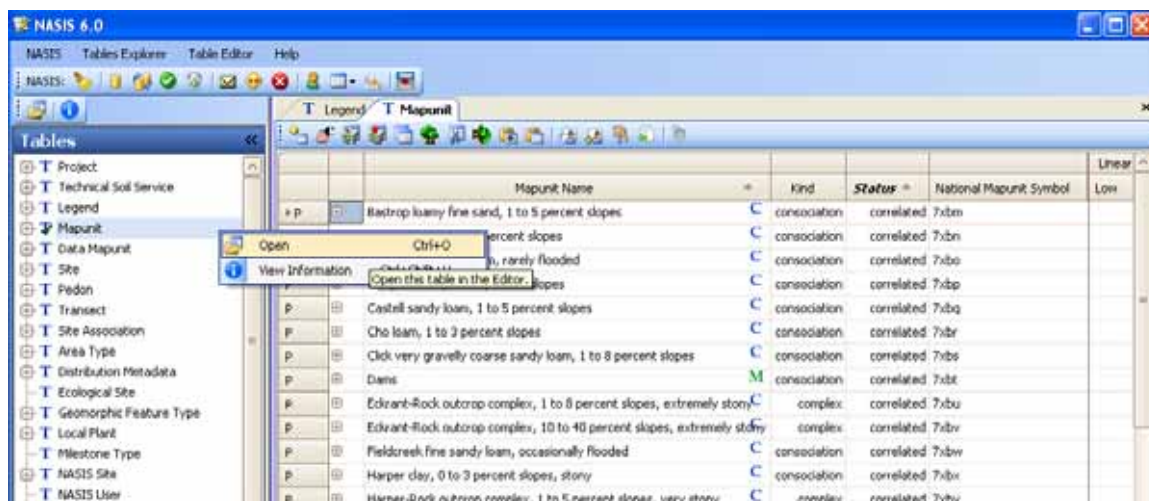


13. The Legend object can be expanded by selecting the “+” plus sign to the left of the row. This action will open the child tables associated with the Legend object.



NASIS User Guide

- Other tables such as the Mapunit Table can be opened to view the map units linked to the Legend. Additional tables are added to the Editor Panel using a separate “tab”. The map units are viewed independent from their legend.



- Other tables can be opened as appropriate.

The process steps to load a selected set are:

- Query the National Database to retrieve data to populate the Local Database.
- Query the Local Database to retrieve data for viewing in the Selected Set.
- Open the appropriate tables for viewing the data.

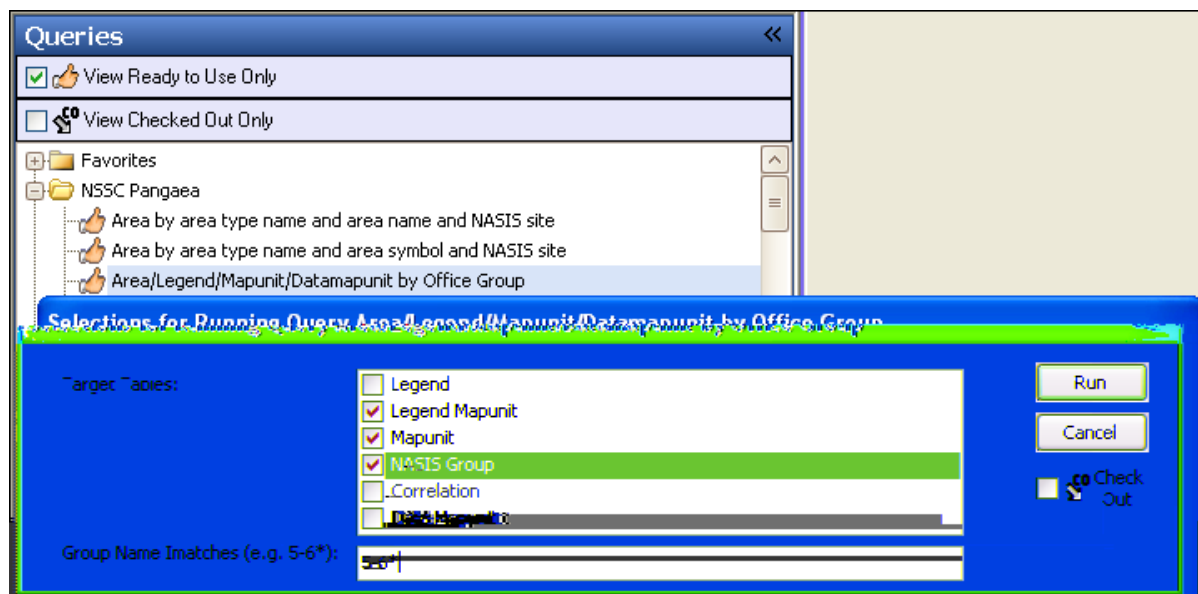
Users may find it beneficial to load all the soil survey area within the office territory into their Local Database. The following is a list of national queries available for querying data.

National queries

There are several national queries designed to meet the needs of all users for “Run Against National Database” and for “Run Against Local Database”. The majority of these queries are named to inform the user of the appropriate Target Tables for running against the Local Database to build a Selected Set. The following queries are but a small selection that can be used to meet the needs of most users.

Area/Lmapunit/Mapunit/Datamapunit by Office Group

The map units and data mapunits for all Non-MLRA Soil Survey Areas will be converted to ownership groups assigned to each Soil Survey Office. Initial assignment of map units is based on the soil survey office boundary and the SSURGO map unit polygon layer. The ownership of the map units and data mapunits will be assigned to the MLRA Office Site and to the new Office Group, for instance, “5-8 Salina, Kansas”. The national “Area/Lmapunit/Mapunit/Datamapunit by Office Group” query will allow the office staff to populate the local database with data that has been assigned to the office.



Area/Lmapunit/Mapunit/Component by Area name, Compname

This query allows the user to load a specific component by name. The Soil Survey Area Name is added to filter the data. This parameter can be used to filter to a specific soil survey area, for instance, “Cherry County, Nebraska”. Or it can be for all of Nebraska, as written. Or it could be for all surveys by entering an asterisk. Setting the Target table to “Component” will load only the components with the name specified in the Component Name parameter. Setting the Target Table to Data Mapunit will load all data mapunits in which the component name appears.

Area by area type name and area name and NASIS site

Area by area type name and area symbol and NASIS site

Area/Legend/Mapunit/Datamapunit by Office Group

Area/Lmapunit/Mapunit/Component by Area and Component name

Selections for Running Query Area/Lmapunit/Mapunit/Component by Area and Component name

Target Tables:

- ☐ Area Type
- ☒ Area
- ☐ Legend
- ☒ Legend Mapunit
- ☒ Mapunit
- ☒ Component
- ☐ Data Mapunit
- ☐ Correlation

Run

Cancel

☐ Check Out

Component Name: valentine

Type in the Soil Survey Area Name: * nebraska

```
Running local query for target tables.
Your query has completed successfully.

47 records were selected for table Area
47 records were selected for table Legend
732 records were selected for table Mapunit
305 records were selected for table Data Mapunit
```

Running the same query with different target tables provides different results. Care must be taken when running a query to select the proper target tables to obtain the appropriate results.

Area/Lmapunit/Mapunit/DMU by Area Symbol

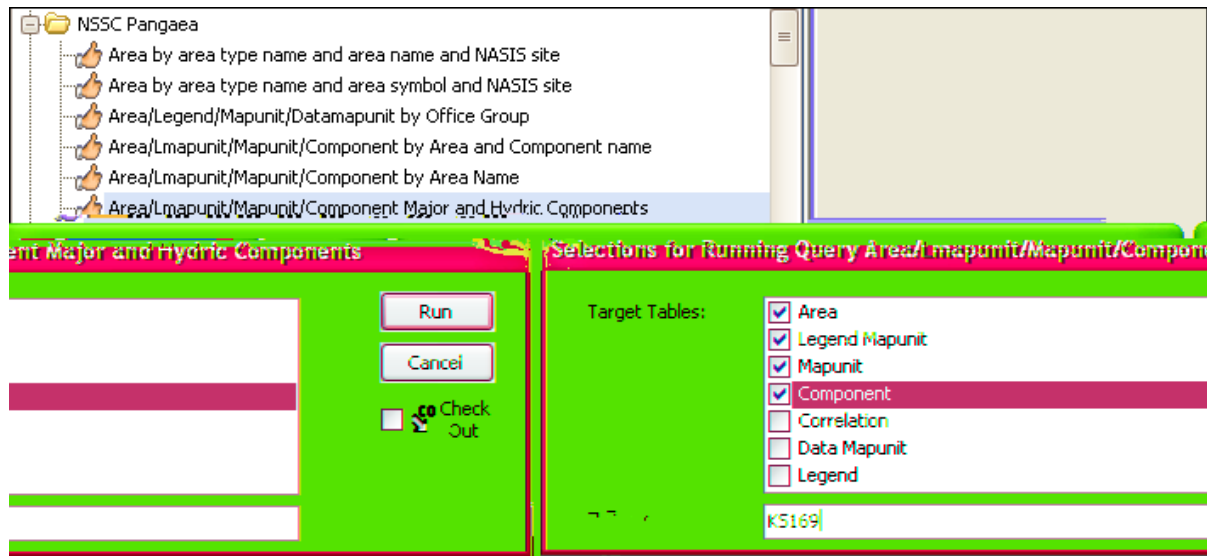
This query will load all data for a given survey area. Once again, wildcards can be used, e.g. TX299 for Llano County, Texas or TX*, for all Texas surveys.

The screenshot shows a dialog box titled "Selections for Running Query Area/Lmapunit/Mapunit/Datamapunit by Area Symbol". It contains the following elements:

- Target Tables:** A list of tables with checkboxes:
 - ☒ Area
 - ☒ Legend
 - ☐ Legend Mapunit
 - ☒ Mapunit
 - ☐ Correlation
 - ☒ Data Mapunit
- Soil Survey Symbol Imatches:** A text input field containing "TX299".
- Buttons:** "Run", "Cancel", and a "Check Out" button with a small icon.

Area/Lmapunit/Mapunit/ Major Comp and Hydric Comp

When exporting data to the staging server, the decision may be to send only major components and hydric components. This query will load the data specific to this requirement. The selected set of major components and hydric components can then be exported to the Soil Data Mart.



1 record was selected for table Area
 1 record was selected for table Legend
 45 records were selected for table Mapunit
 45 records were selected for table Data Mapunit

 Done. Results not added to selected set.

 Preparing query "Area/Lmapunit/Mapunit/Component Major and Hydric Comp"..."
 Running local query for target tables.
 Your query has completed successfully.

 1 record was selected for table Area
 45 records were selected for table Legend Mapunit
 45 records were selected for table Correlation
 93 records were selected for table Component

 Done. Results not added to selected set.

Area/Lmapunit/Mapunit/DMU by Areasym, Mapunit Name

This query can be used to load all occurrences of a given map unit name specific to a survey or with the use of wild cards to increase the extent. Wildcards can also be used in the Mapunit Name to increase the extent of the map units, e.g. "Harney silt loam*" to retrieve all Harney silt loam map units regardless of other phase criteria.

Selections for Running Query Area/Lmapunit/Mapunit/Datamapunit by Mapunit Name

Target Tables:

- ☒ Area
- ☒ Legend Mapunit
- ☒ Mapunit
- ☐ Correlation
- ☒ Data Mapunit
- ☐ Area Type
- ☐ Legend

Area Symbol Imatches: KS*

Mapunit Name Imatches: Harney silt loam*

Geographic Applicability (1 or more):

- ☐ current for part of area
- ☒ current wherever mapped
- ☐ not current

Run Cancel

☐ Check Out

Running local query for target tables.
Your query has completed successfully.

32 records were selected for table Area
67 records were selected for table Legend Mapunit
67 records were selected for table Mapunit
34 records were selected for table Data Mapunit

Done. Results not added to selected set.

Preparing query "Area/Lmapunit/Mapunit/Datamapunit by Mapunit Name"...
Running local query for target tables.
Your query has completed successfully.

32 records were selected for table Area
67 records were selected for table Correlation
34 records were selected for table Data Mapunit
32 records were selected for table Legend

Done. Results not added to selected set.

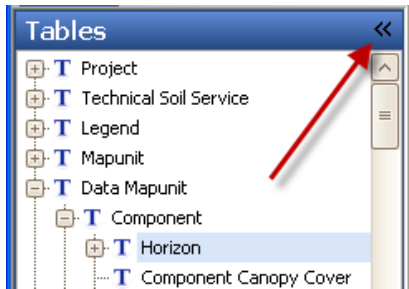
Chapter 5: Understanding Table Layout

The following scenario demonstrates the various options and tools available for changing the table layout in order to analyze data. This scenario will use the horizon table. To begin:

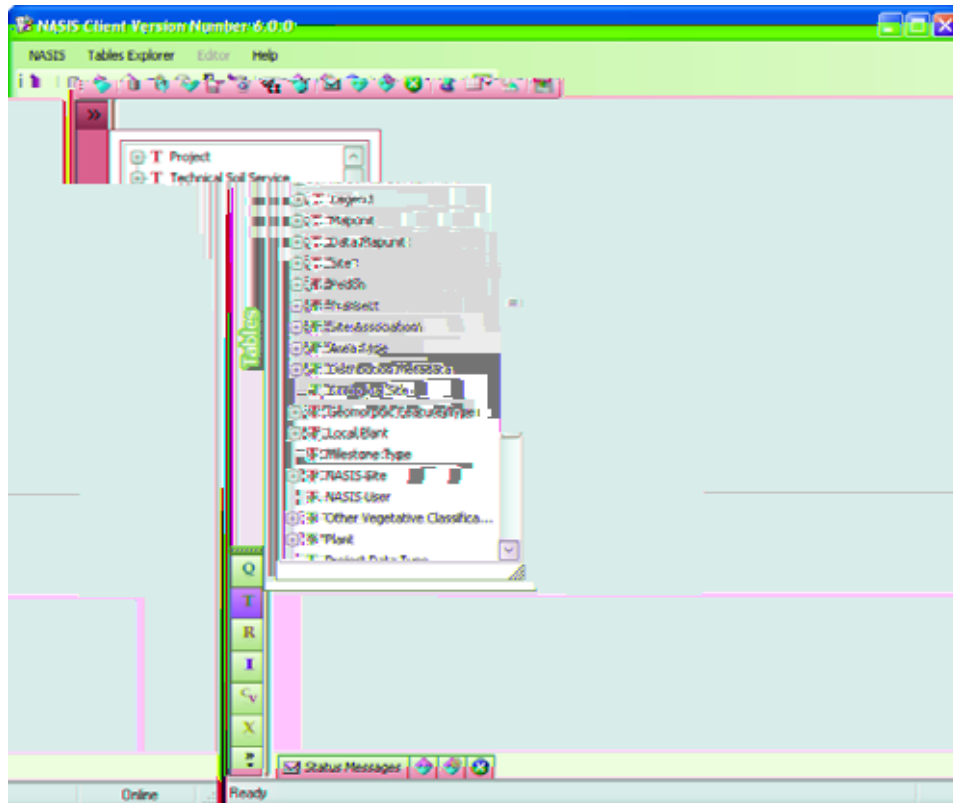
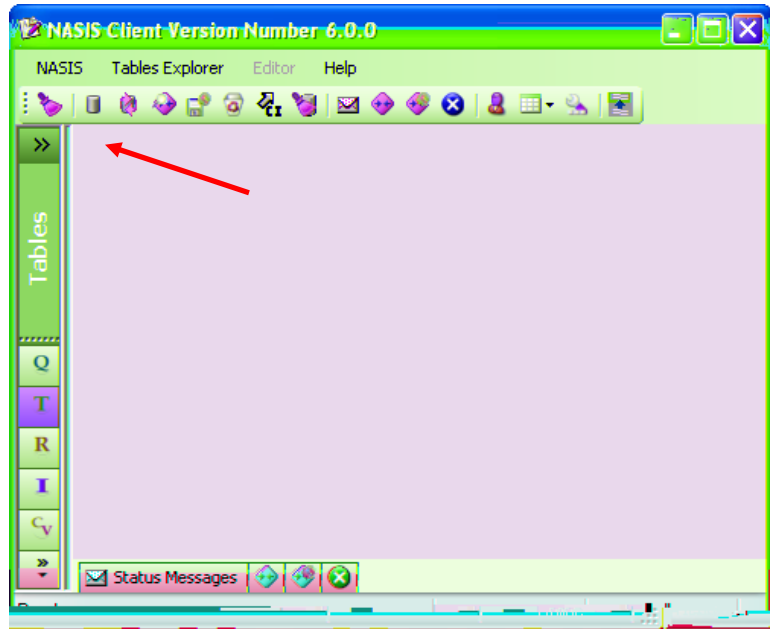
- Load any data into the selected set.
- In the Tables Explorer panel, click on the “+” (plus) to open the Data Mapunit tree
-

Hiding the Explorer Panel

To gain additional screen space, the double arrow icon in the upper right hand panel is used to hide the Explorer panel. Click on the icon "<<" in the upper right and panel corner to hide and the >> to unhide the Explorer panel:

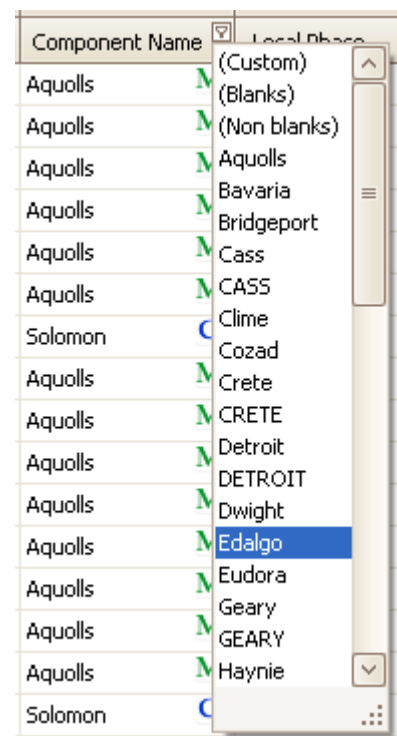
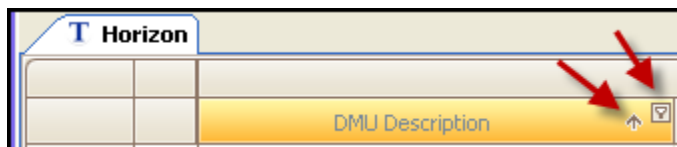
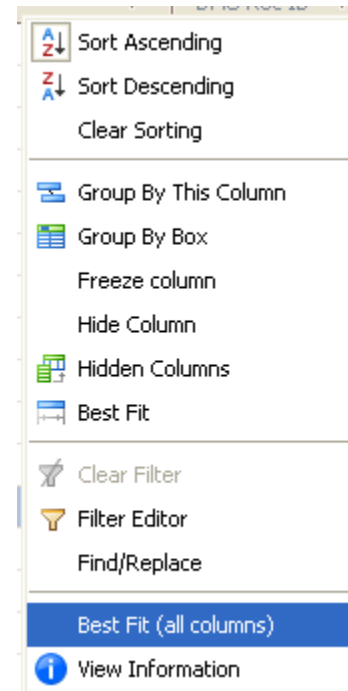


The information within the panel is easily accessed by clicking on the Explorer banner, in this case the Tables.



Right Click Menu

The following instructions will use the “right click” menu along with the icons available on each column header. The right click menu is accessed by right clicking the mouse on a column header.

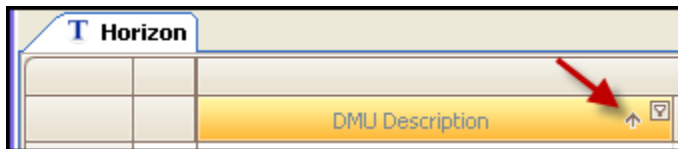


Sorting Columns

Sorting a table maintains all data within the selected set. No data is removed from the selected set. And editing action will affect those rows in the selected set that are “checked out” and editable. Sorting columns is a powerful analysis tool but the user must be aware of the selected set.

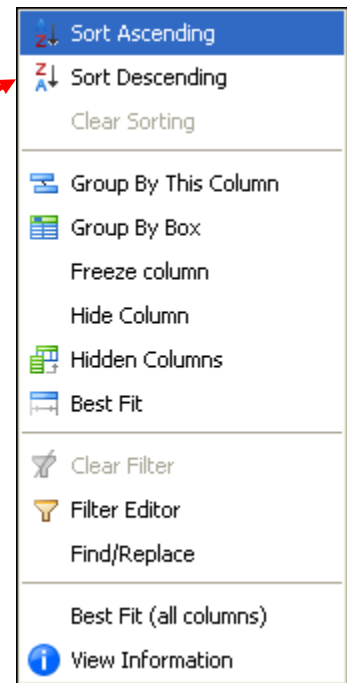
Single Column Sorting

The first method available to sort a column is to use the column header icon. This allows a sort based on the specific column. An icon is available on the column header. The sort order is identified by an arrow icon on the column header. Clicking on the column header once will sort the column in an ascending order with an up arrow icon. Clicking on the column header twice will sort the column in a descending order with a down arrow icon. The sort modifies the table based on the selected column.



The second method available to sort a column is to use the right click menu. From the menu the user can choose whether the column is sorted in ascending or descending order.

These two methods will sort the table based on one column.



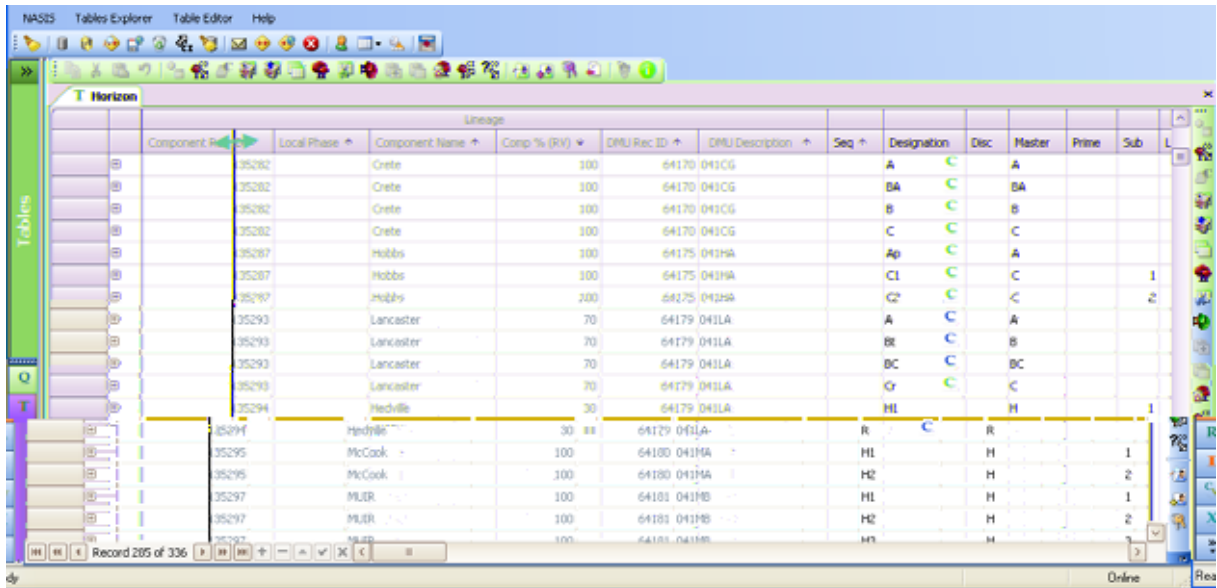
Multiple Column Sorting

There are instances when the user will wish to sort the table based on multiple columns and sorts. There are two methods to sort on multiple columns:

Using the right click menu, each column is chosen and the sort order is assigned, column by column. In this example, the Component Name column was chosen first and ad,

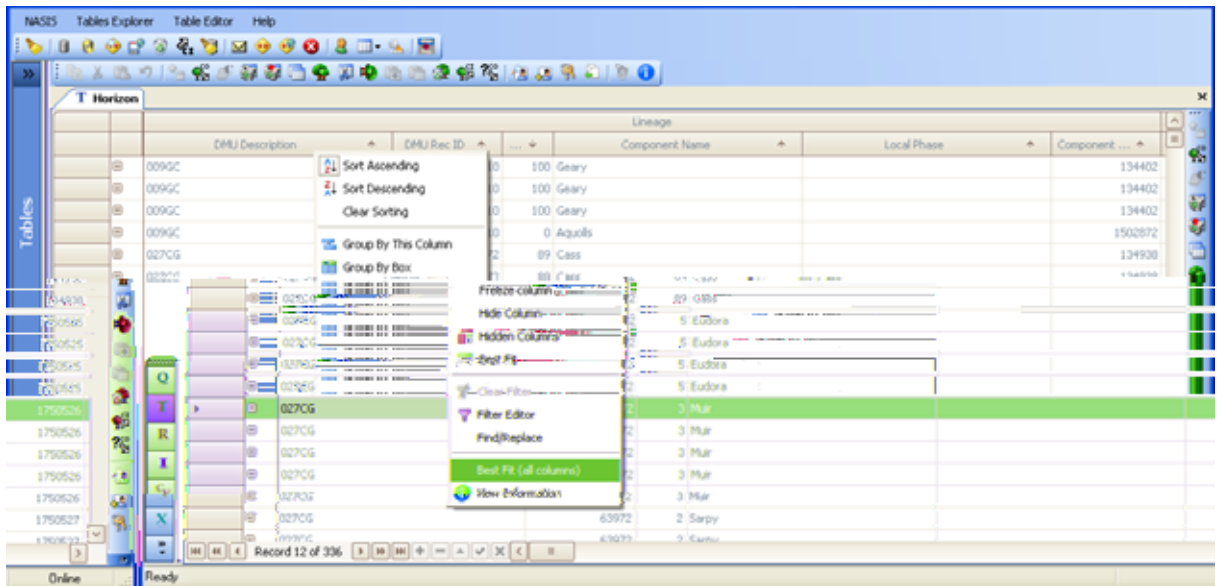
Resizing Columns

Each column in NASIS has a default width. However, columns can be manually resized by hovering the cursor between the column names until it becomes a double arrow cursor. Then click and drag the column to the desired width.



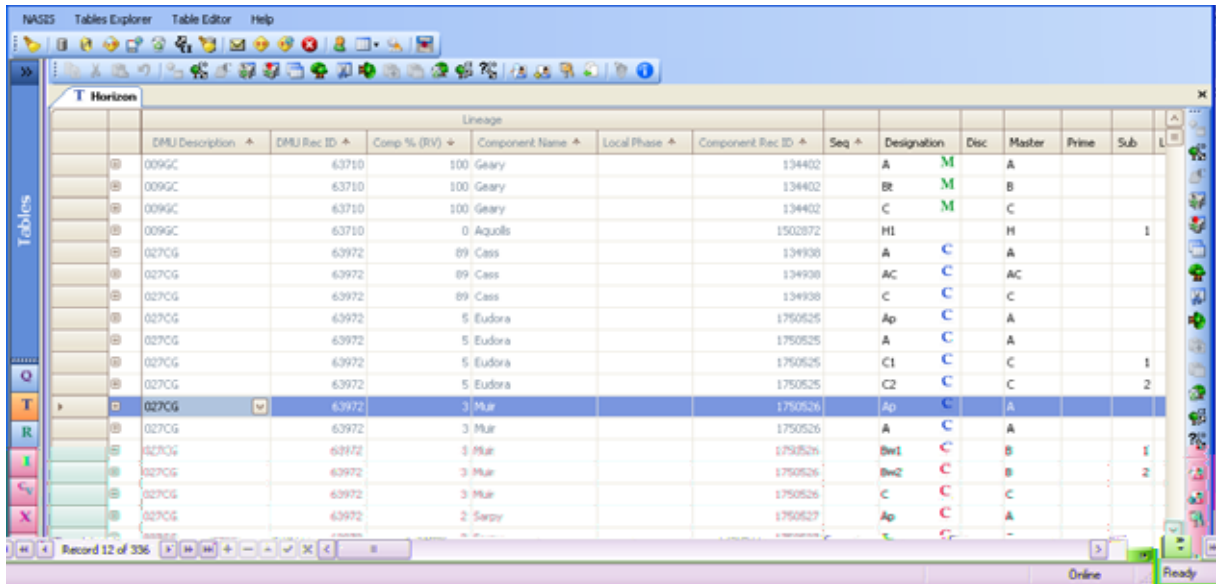
Best Fit Column

Columns can also be resized based on the information found in the column. On the right click menu there are two menu choices, "Best Fit" for the individual column and "Best Fit (all columns)" for all columns within the table:



NASIS User Guide

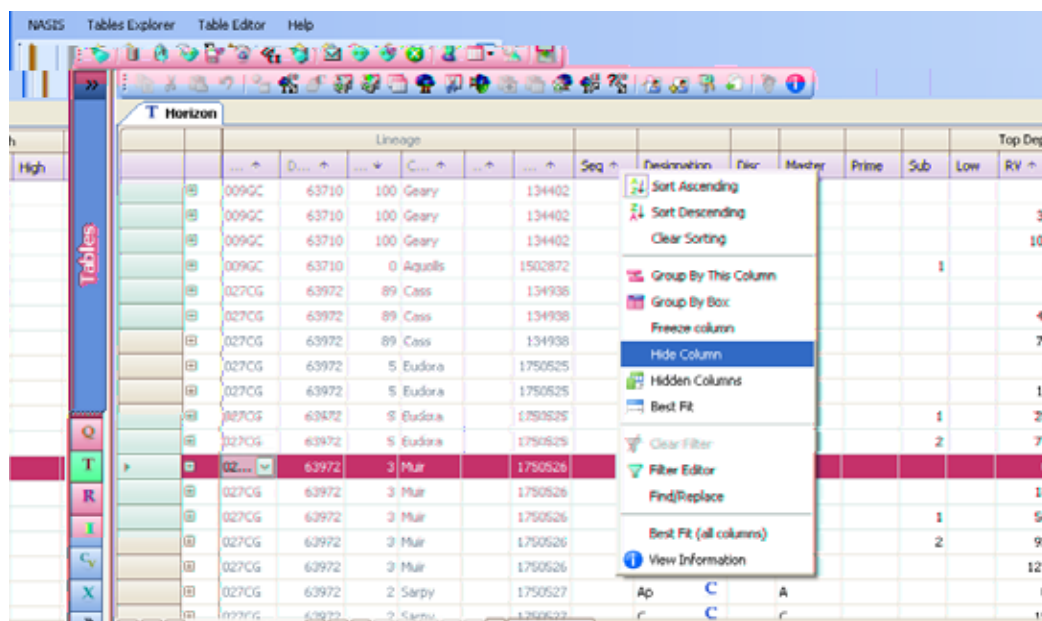
The result of “Best Fit (all columns)” is the collapse of all columns to the smallest width possible with readable column names.



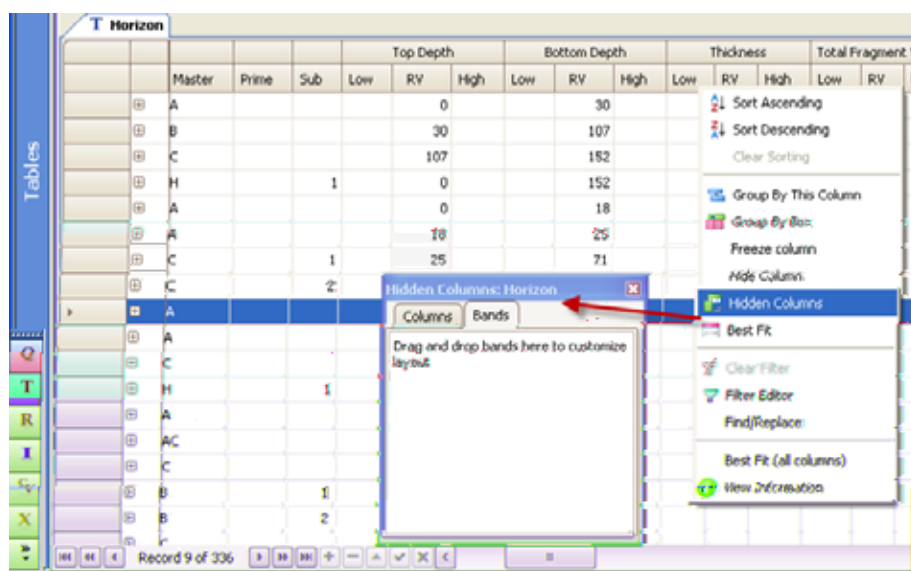
DMU Description	DMU Rec ID	Comp % (RV)	Component Name	Local Phase	Component Rec ID	Seq	Designation	Disc	Master	Prime	Sub	L
009GC	63710	100	Geary		134402	A	M		A			
009GC	63710	100	Geary		134402	Bt	M		B			
009GC	63710	100	Geary		134402	C	M		C			
009GC	63710	0	Aquillo		1502872	H1			H		1	
027CG	63972	89	Cass		134938	A	C		A			
027CG	63972	89	Cass		134938	AC	C		AC			
027CG	63972	89	Cass		134938	C	C		C			
027CG	63972	5	Eudora		1750525	Ap	C		A			
027CG	63972	5	Eudora		1750525	A	C		A			
027CG	63972	5	Eudora		1750525	C1	C		C		1	
027CG	63972	5	Eudora		1750525	C2	C		C		2	
027CG	63972	3	Muir		1750526	Ap	C		A			
027CG	63972	3	Muir		1750526	A	C		A			
027CG	63972	3	Muir		1750526	Bw1	C		B		1	
027CG	63972	3	Muir		1750526	Bw2	C		B		2	
027CG	63972	3	Muir		1750526	C	C		C			
027CG	63972	2	Serpy		1750527	Ap	C		A			

Hide Columns

Table columns can be hidden from the Editor panel, for example, the “Seq” column can be hidden. There are three methods of hiding a column. One method is to Right click on the column header and choose “Hide Column” from the right click menu.



The second method is using “Drag and Drop into a hidden columns dialog box”. Bands and Columns can be hidden from the view by choosing the “Hidden Columns” from the shortcut menu. A “Hidden Columns” box will appear and columns or bands can then be Dragged and Dropped into the Hidden Columns “box”.



In this example the “Band” Thickness has three “Columns” – Low, RV and High. All three columns can be hidden by selecting the “Thickness” Band.

NASIS User Guide

The result is that Thickness columns (Low, RV, high) will appear in the “Hidden Columns” box under the “Bands” tab.

The screenshot shows a software window titled 'Horizon' with a table. On the left, a vertical sidebar labeled 'Tables' contains a button 'Q'. The table has columns for 'Master', 'Prime', 'Sub', 'Top Depth' (Low, RV, High), 'Bottom Depth' (Low, RV, High), and 'Total Fragment Volume'. A 'Hidden Columns: Horizon' dialog box is open on the right, showing the 'Bands' tab with 'Thickness' listed.

		Master	Prime	Sub	Top Depth			Bottom Depth			Total Fragment Volume		
					Low	RV	High	Low	RV	High	Low	RV	High
+	A					0							
+	B					30							
+	C					107							
+	H			1		0							
+	A					0							
+	A					18							
+	C			1		25							
+	C			2		71							
+	A					0							
+	A					18							
+	C					15							

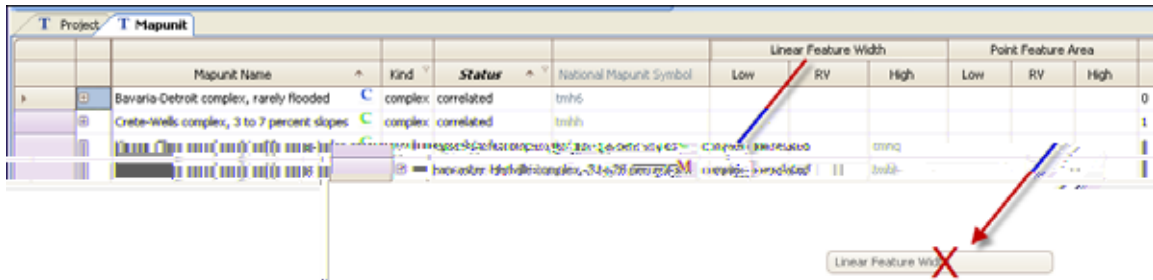
Columns and Bands are stored in the Hidden Columns box and can be returned to the Editor panel by selecting a Band or a Column from the Hidden Columns box and using Drag and Drop to return it to the Table in the Editor Panel.

The screenshot shows a software window with a table. A 'Hidden Columns: Horizon' dialog box is open, showing the 'Columns' tab with a list of columns: 'Bottom Depth (High)', 'Bottom Depth (Low)', 'Top Depth (High)', and 'Top Depth (Low)'. The table has columns for 'Co...', 'Desig...', 'RV', 'RV', 'Low', 'RV', and 'High'.

Co...	Desig...	RV	RV	Low	RV	High
134402	A	M	0	30		
134402	Bt	M	30	107		
134402	C	M	107	152		
150287						
175052						
175052						
175052						
175052						
150950						
134938						
134938						

NASIS User Guide

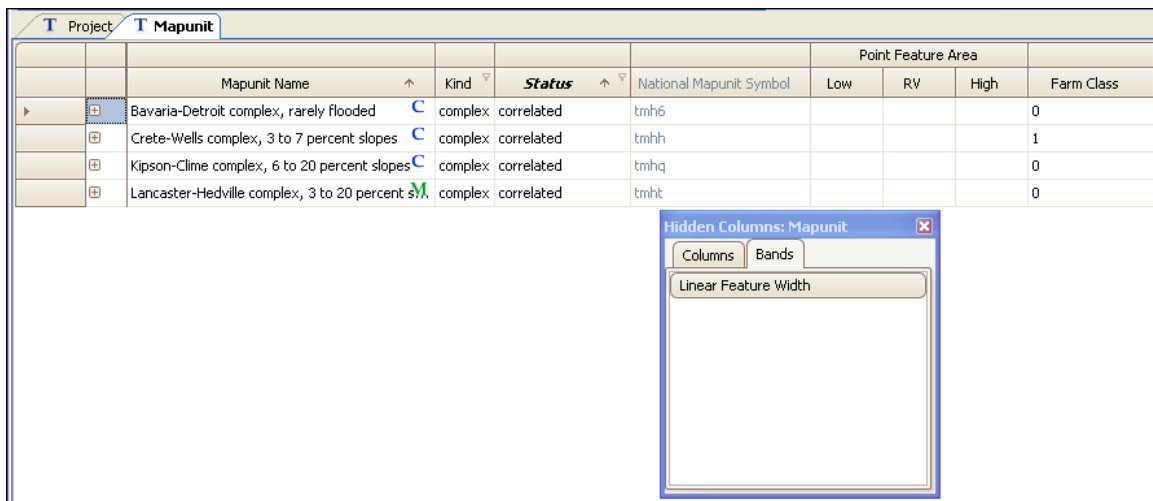
The third method is by dragging and dropping the Column or Band below the table header. For instance, the band “Linear Feature Width” is grabbed and drug below the header where an X appears denoting the table is hidden.



The result is:

Project		Mapunit													
		Mapunit Name	Kind	Status	National Mapunit Symbol	Low	RV	High	Low	RV	High	Farm Class			
		Bavaria-Detroit complex, rarely flooded	C	complex	correlated	tmh6						0			
		Crete-Wells complex, 3 to 7 percent slopes	C	complex	correlated	tmhh						1			
		Kipson-Cline complex, 6 to 20 percent slopes	C	complex	correlated	tmhq						0			
		Lancaster-Hedville complex, 3 to 20 percent slopes	M	complex	correlated	tmht						0			

And the hidden band appears in the hidden columns/band box:

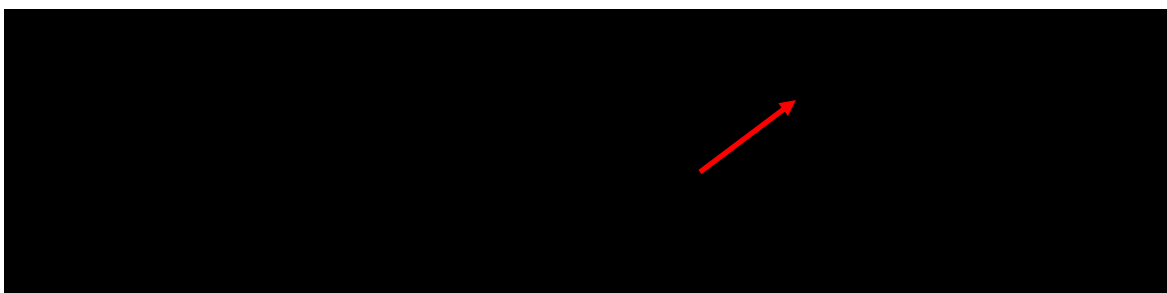


Moving Bands

A column can be moved to any location in the Editor panel. Columns are moved by clicking on the column and dragging it to a new location that meet user needs.

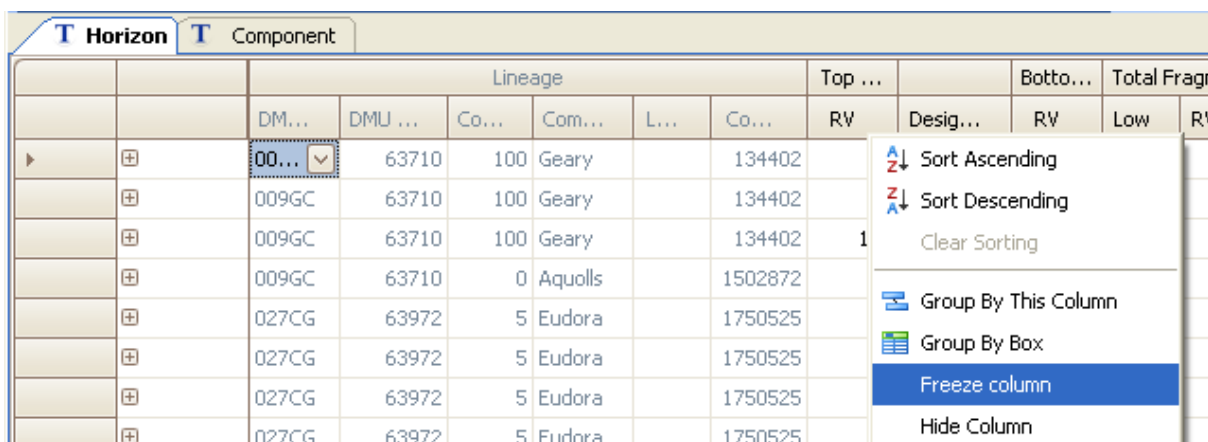
T Horizon		T Component											
		Lineage							Top ...	Botto...	Total Fragment Volu..		
		DM...	DMU ...	Co...	Com...	L...	Co...	Desig...	RV	RV	Low	RV	High
▶	⊕	00... ▾	63710	100	Geary		134402	A M	0	30			
	⊕	009GC	63710	100	Geary		134402	Bt M	30	107			
	⊕	009GC	63710	100	Geary		134402	C M	107	152			
	⊕	009GC	63710	0	Aquolls		1502872	H1	0	152			

In this instance, the Top Depth RV is moved from the right of the Designation column to the left:



Freeze columns

A column can be “Frozen” allowing all other columns to the right of the “frozen column” to scroll. In this example, now that the Top Depth RV column has been moved to the left of Designation, the column can be frozen so that the scroll bar moves those columns that are to the right of Top Depth RV:



		Lineage						Top ...		Botto...	Total Fragn	
		DM...	DMU ...	Co...	Com...	L...	Co...	RV	Desig...	RV	Low	RV
▶	⊕	00...	63710	100	Geary		134402					
	⊕	009GC	63710	100	Geary		134402					
	⊕	009GC	63710	100	Geary		134402	1				
	⊕	009GC	63710	0	Aquolls		1502872					
	⊕	027CG	63972	5	Eudora		1750525					
	⊕	027CG	63972	5	Eudora		1750525					
	⊕	027CG	63972	5	Eudora		1750525					
	⊕	027CG	63972	5	Eudora		1750525					

NASIS User Guide

As the scroll bar is moved to the right, the Top Depth RV column remains on the left as the remaining columns to the right scroll.

T Horizon		T Component												
		Lineage						Top ...		#200				
		DM...	DMU ...	Co...	Com...	L...	Co...	RV		High	Low	RV	High	
▶	⊕	00... ▾	63710	100	Geary		134402	0 5		100.0	80.0	90.0	100.0	
	⊕	009GC	63710	100	Geary		134402	30 0		100.0	85.0	92.5	100.0	
	⊕	009GC	63710	100	Geary		134402	107 0		100.0	85.0	92.5	100.0	
	⊕	009GC	63710	0	Aquolls		1502872	0		M	M	M	M	
	⊕	027CG	63972	5	Eudora		1750525	0 0		100.0	50.0	70.0	90.0	
	⊕	027CG	63972	5	Eudora		1750525	18 0		100.0	50.0	70.0	90.0	

Navigating through child tables

Several Parent tables have a number of child tables that do not fit neatly within the screen. Clicking on the tabs will allow the user to navigate between child tables. If more tables exist than can be shown on the screen, the double arrows will appear for navigating to additional child tables. Click on the left or right arrow to navigate to additional child tables.

Project		Mapunit		Data Mapunit										
Component		Data Mapunit: Certification History		Data Mapunit: Crop Yield		Data Mapunit: Text								
		Comp %												
M	Seq	Low	RV	High	Component Name	Local Phase	Taxon Kind	Major CC						
	60				Bawitz		series							
Horizon		Component Canopy Cover		Component Crop Yield		Component Diagnostic Features		Component Ecological Site		Component Erosion Accelerated		Component Ext		
	Seq	Designation		Disc	Master	Prime	Sub	Top Depth		Bottom Depth				
								Low	RV	High	Low	RV	High	Low
		Ap			A				0			15		
		An			A				15			33		
		Blny			B				33			89		
		Bln			B				89			114		
		Cy			C				114			152		

Continuing to open child tables will eventually incur a limit of screen territory and scroll bars will appear as shown in the next image.

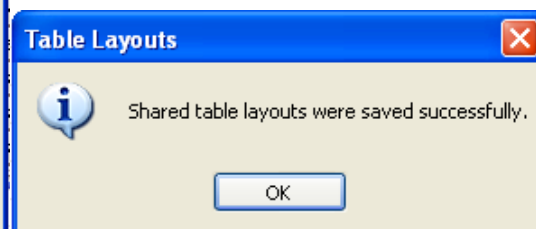
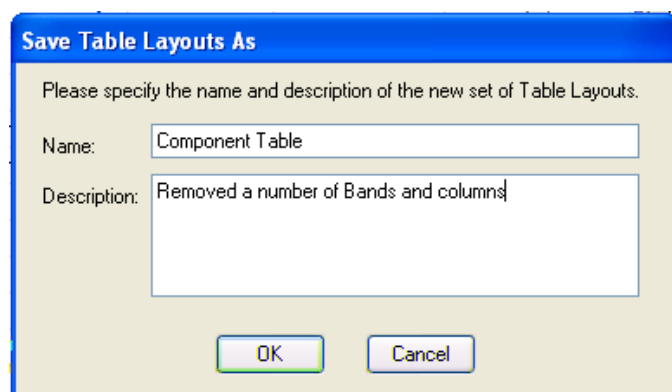
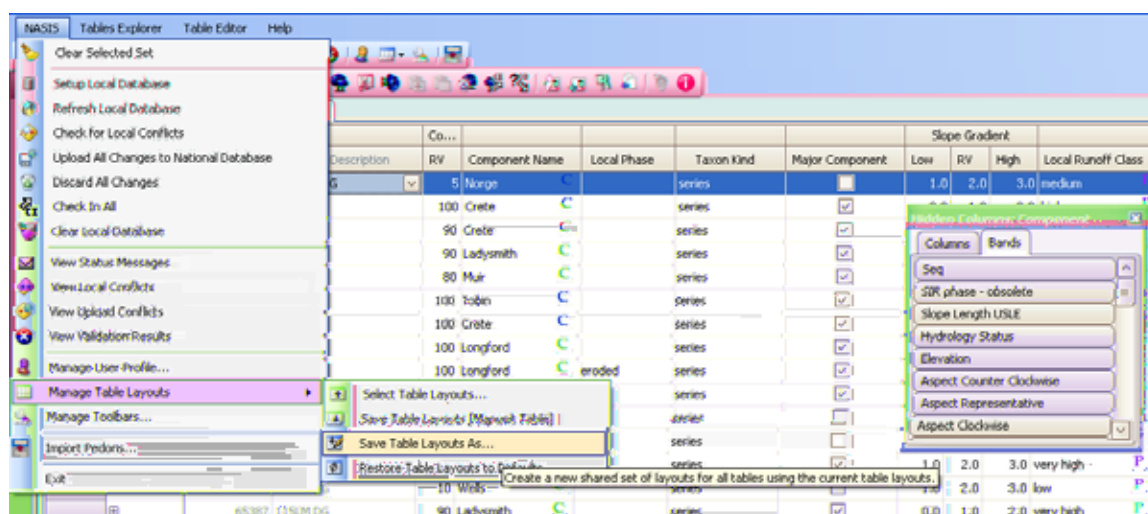
Examining a Table Layout

Many of the tables in NASIS contain more columns than can be viewed on the screen at the same time. Although scroll bars allow for vertical and horizontal movement, when viewing tables with numerous columns, such as the Component table, editing may involve scrolling between columns several times for each row that is edited.

Table layout allows the user to customize the table display in NASIS. Many of the principals discussed in the previous section can be saved as a “Table Layout”. Columns can be hidden from view; columns can be moved; columns can be “frozen”; and columns can be sorted, filtered or grouped based on the user preferences. The user preference can be saved as a “Table Layout”. It is best to modify all tables before saving the table layout.

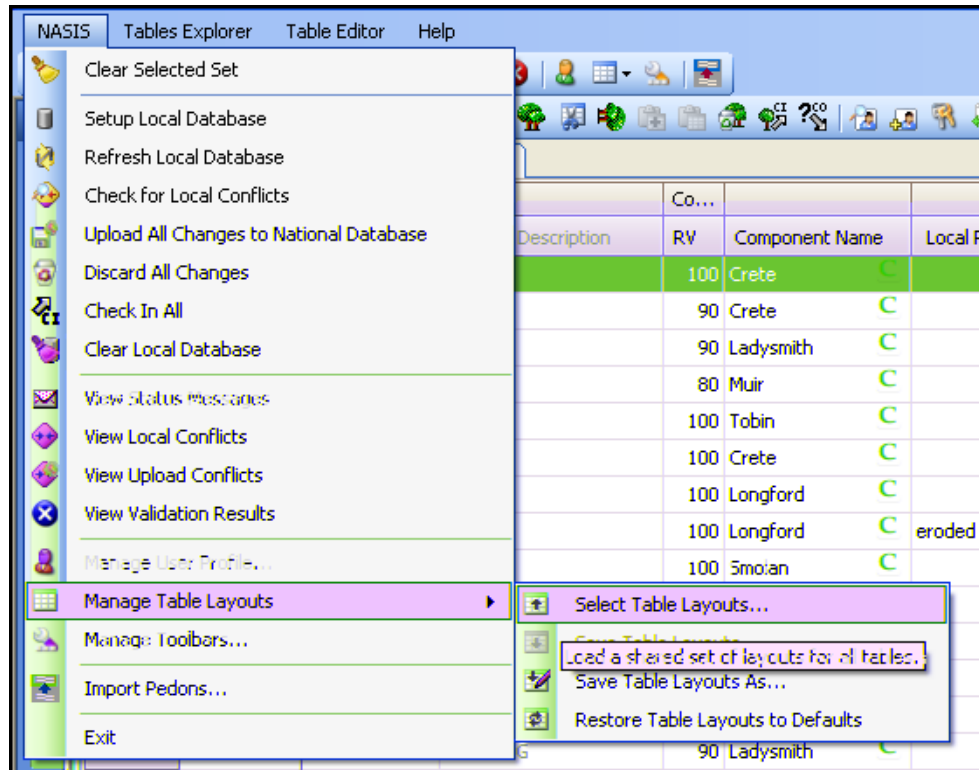
Saving a Table Layout

After the tables are modified, choose the “NASIS” menu then “Manage Table Layouts”. The user can then save the Table Layout and assign a name and description for the specific Table Layout.

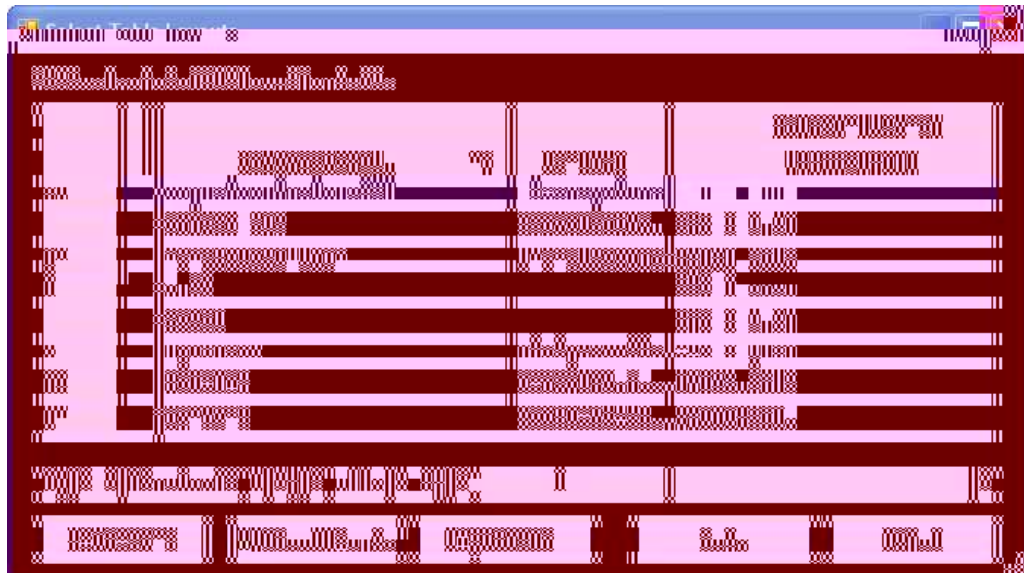


Selecting a Table Layout

Table layouts can be selected from the NASIS menu.

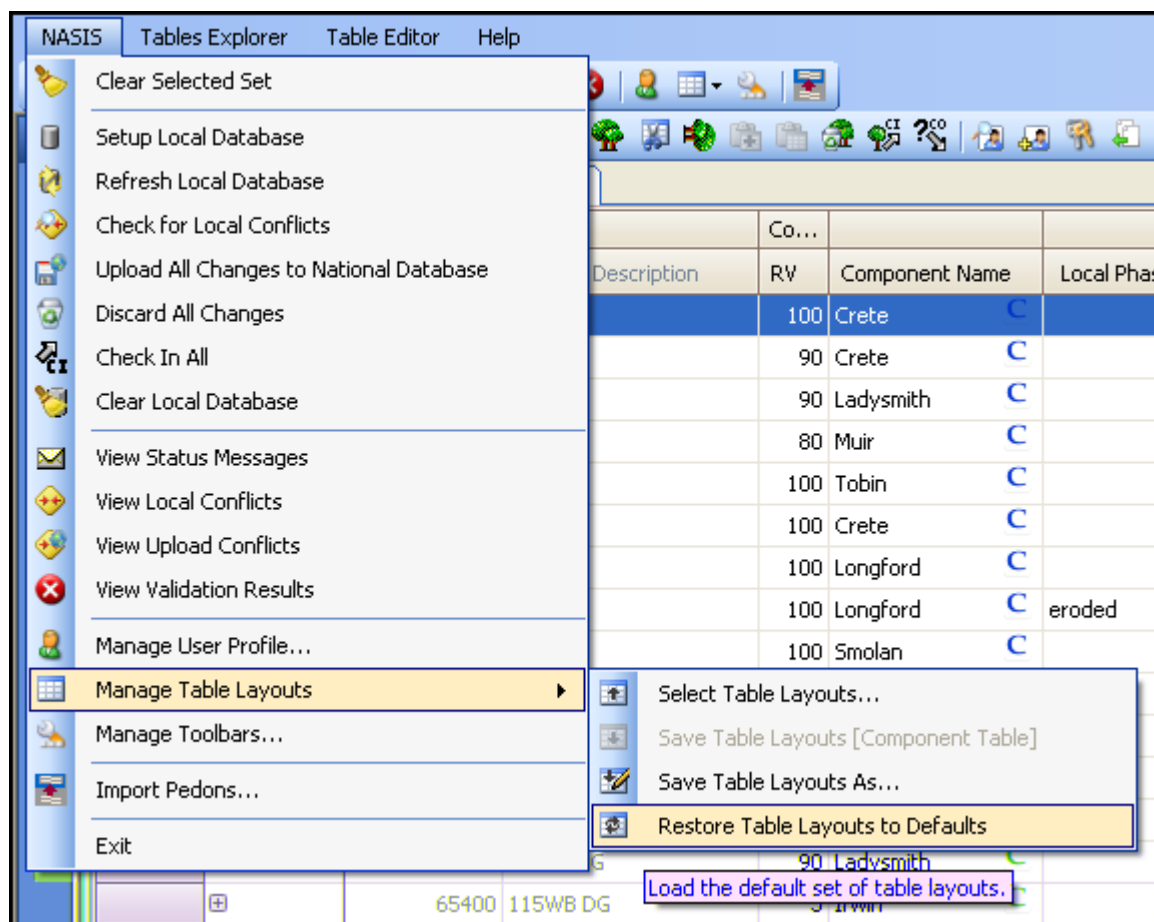


A parameter box will appear with the available Table Layouts sorted by the NASIS Site. Once saved, a Table layout is available to all users. Just like any other table, the Table Layouts columns can be sorted, filtered, or grouped based on user defined needs.



Restoring the default edit setup

The NASIS tables can be restored to the table default. NASIS provides a default setup to restore all tables to their original setup. From the NASIS menu, choose Manage Table Layouts and Restore Table Layouts to Default.

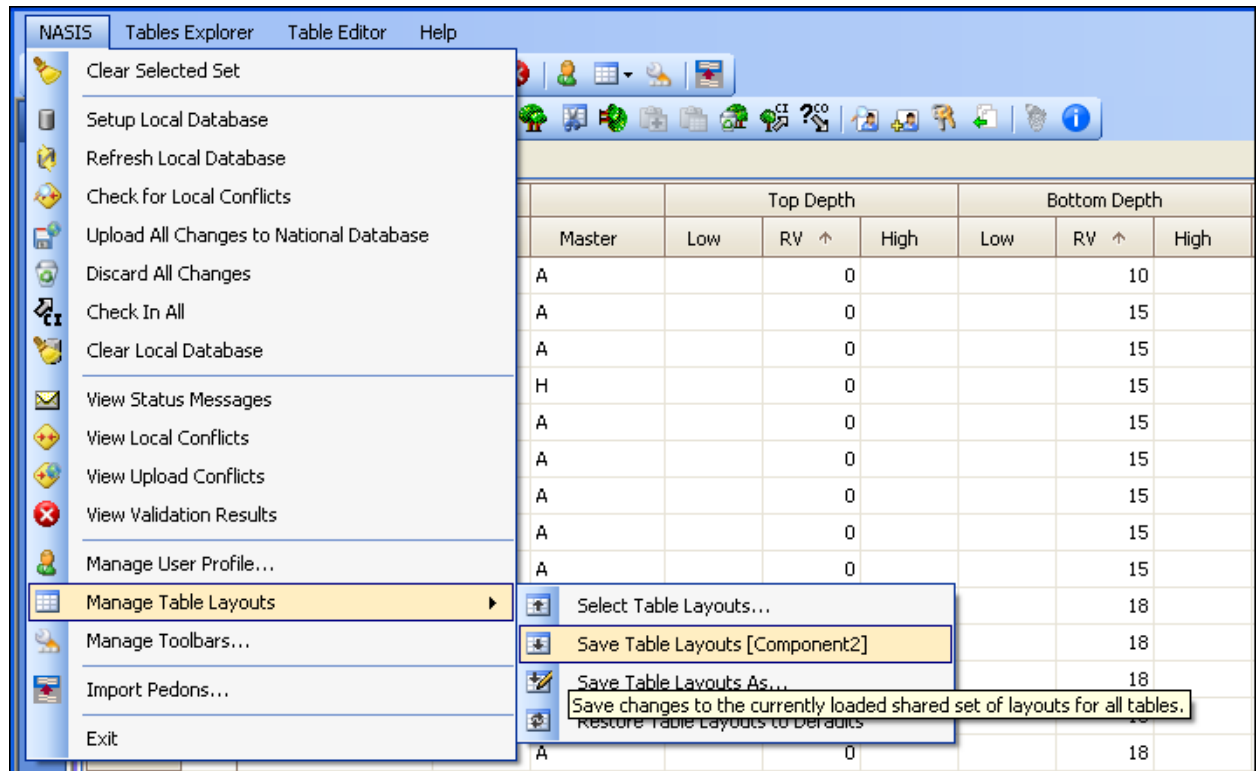


Modifying a Table Layout

There will be times in which the user will wish to add to an existing table layout. There is a specific process that must be followed.

If a Table Layout has been recently saved, but not “Checked In”, (e.g. Component2), then the steps are

1. If the user needs to modify a table that has already been modified, then from the NASIS menu, choose Manage Table Layouts and Restore Table Layouts to Default.
2. Return to the table and correct its modification.
3. Then move to another table (e.g. Horizon) and modify the table as desired.
4. From the NASIS menu, choose Manage Table Layouts and “Save Table Layouts [Layout name]”.



Once a Table Layout has been saved and “Checked In”, in order to modify the Table Layout it must be checked out and similar to any edited data.

Analysis tools

Group By Columns

Columns within a table can be grouped for easier analysis. Right click on the “T” column in the Component table and select the “Group By This Column”.

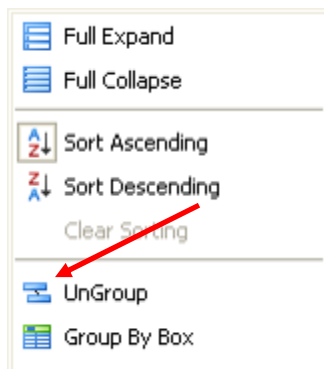
T Component										
		Lineage		Com...						
		DM... ↑	D... ↑	RV ↓	Component Name ↑	Local Runoff Class	T	WEI	WEG	Erosion Class
		009GC	63710	100	Geary	medium	P			
		009GC	63710	0	Aquolls	eligible	P			
		027CG	63972	89	Cass	eligible	P			
		027CG	63972	5	Eudora	low	P			
		027CG	63972	3	Muir	low	P			
		027CG	63972	2	Sarpy	eligible	P			
		027CG	63972	1	Haynie	low	P			
		027CG	63972	0	Aquolls	eligible	P			
		029ST	64036	99	Sutphen	very high	P			
		029ST	64036	1	Aquolls	eligible	P			

The result is the data in the table is grouped by the T value column. Grouping of columns is a useful analysis tool. Data is not removed from the selected set, only grouped based on the user decisions. Care must be exercised when editing data when grouped. Opening a “group” will feature those records within that specific group.

T Component										
		Lineage		Com...						
		DM... ↑	D... ↑	RV ↓	Component Name ↑	Local Runoff Class	T	WEI	WEG	
		+ T:								
L		+ T: 1								
		+ T: 2								
L		- T: 3								
L		+ 041LA	64179	70	Lancaster	medium	P	P 3	48	6
		+ 113CM	65341	100	Clime	very low	P	P 3	86	4
		+ 115IB DG	65381	5	Clime	high	P	P 3	86	4
		+ 115WB DG	65400	5	Clime	high	P	P 3	86	4
		+ 169CE	66130	100	Clime	medium	P	P 3	86	4
		+ 169ED	66136	100	Edalgo	very high	P	P 3	38	7
		+ 169LF	66143	100	Lancaster	medium	P	P 3	48	6
		+ MLRA 74 ...	66142	40	Clime	very high	P	P 3	86	4
		+ T: 4								
		+ T: 5								

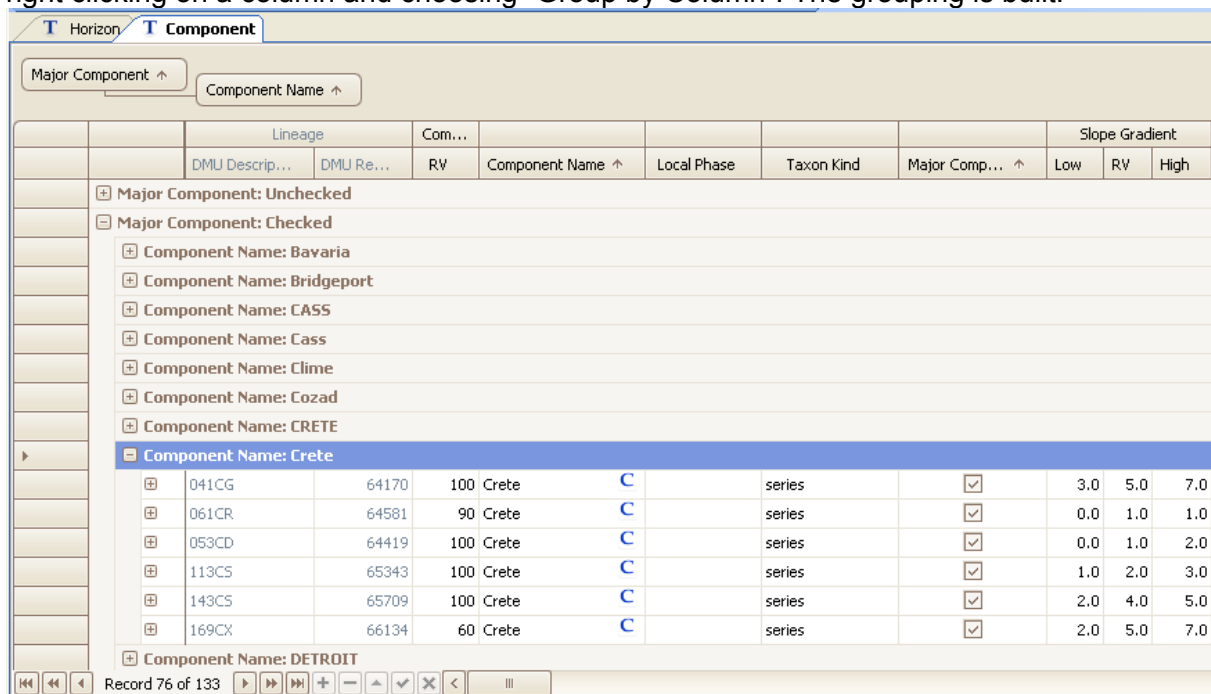
NASIS User Guide

This grouping can be returned to normal by selecting the right click menu on the specific column and selecting “Ungroup”.



Group by Box

Choosing the “Group By Box” allows for multiple columns to be grouped. Notice the Group By Box opens a section above the table Band. Choose the grouping columns, by right clicking on a column and choosing “Group by Column”. The grouping is built.



Major Component: ↑		Component Name: ↑	
Lineage	Com...		
DMU Descrip...	DMU Re...	RV	Component Name ↑
Major Component: Unchecked			
Major Component: Checked			
Component Name: Bavaria			
Component Name: Bridgeport			
Component Name: CASS			
Component Name: Cass			
Component Name: Clime			
Component Name: Cozad			
Component Name: CRETE			
Component Name: Crete			
041CG	64170	100	Crete C
061CR	64581	90	Crete C
053CD	64419	100	Crete C
113CS	65343	100	Crete C
143CS	65709	100	Crete C
169CX	66134	60	Crete C
Component Name: DETROIT			

In this example, the components are grouped by the major component column, first, then by the component name column, second. The image above identifies how the soils are grouped by major components and component name. The Crete soils are opened for review.

To return, right click on the “grouped” column(s) and choose **Ungroup**.

Filtering

Similar to the grouping of columns, filtering columns is also used for refining the selected set, however filtering will hide or, essentially, temporarily remove those records from the selected set that are not defined by the filter. Filtering is a very effective tool for the Find/Replace and Global editing function in NASIS 6.0. Records are returned to the selected set once the filter is edited or removed.

The filtering icon is a funnel. It is found on the column header and on the right click menu. In the image below, the funnel on the Major Component column header is clicked and the choice list appears:

Component							
Lineage		Com...					Slope Gradi
DMU Descrip...	DMU Re...	RV	Component Name	Local Phase	Taxon Kind	Major Component	
041CG	64170	100	Crete	C	series	<input checked="" type="checkbox"/>	(Custom) 5.0
041HA	64175	100	Hobbs	C	series	<input checked="" type="checkbox"/>	(Blanks) 2.0
041HA	64175	0	Aquolls	M	taxon above family	<input type="checkbox"/>	(Non blanks) 2.0
041LA	64179	70	Lancaster	C	series	<input checked="" type="checkbox"/>	Unchecked 8.0
041LA	64179	30	Hedville	C	series	<input checked="" type="checkbox"/>	Checked 1.0

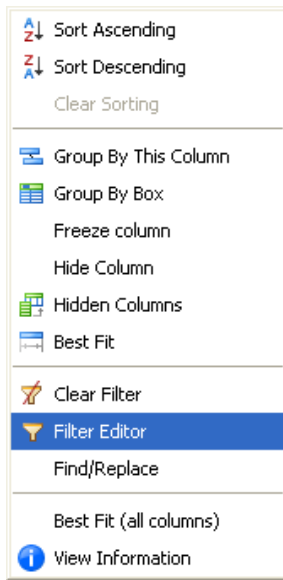
Selecting the “Local Runoff Class” column, choosing the filter on the column header, and choosing “Low” will add to the filter of the selected set. The selected set now includes only those “major components” that have a “Low” runoff class. The filter is recorded in the lower left hand corner of the edit panel.

Component							
Lineage		Com...					Slope Gradient
DMU Descrip...	DMU Re...	RV	Component Name	Local Phase	Taxon Kind	Major Component	Local Runoff Class
HA	64175	100	Hobbs	C	series	<input checked="" type="checkbox"/>	low
HA	65366	100	Seneca	C	series	<input checked="" type="checkbox"/>	low
HA	65400	90	Wells	C	series	<input checked="" type="checkbox"/>	low
HA	65724	100	Wells	C	series	<input checked="" type="checkbox"/>	low
HA	65728	100	McCook	C	series	<input checked="" type="checkbox"/>	low
HA	65736	100	Wells	C	series	<input checked="" type="checkbox"/>	low
HA	66020	100	Geary	C	series	<input checked="" type="checkbox"/>	low
HA	66131	100	Cocad	C	series	<input checked="" type="checkbox"/>	low
HA	66247	100	McCook	C	series	<input checked="" type="checkbox"/>	low

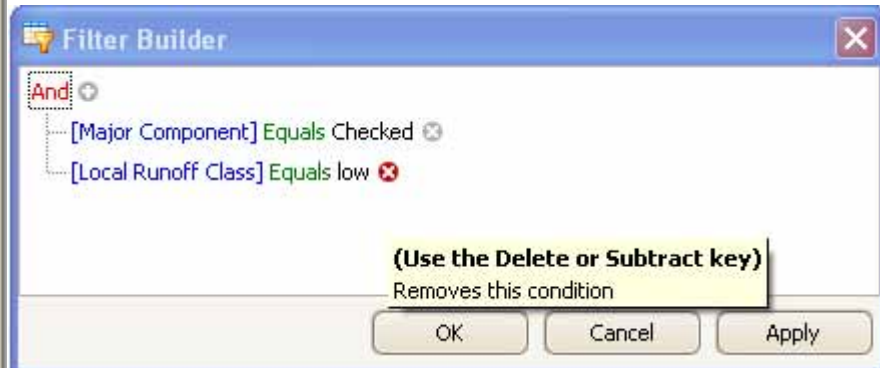
The filter is cleared by clicking on the red “X” in front of the filter.

NASIS User Guide

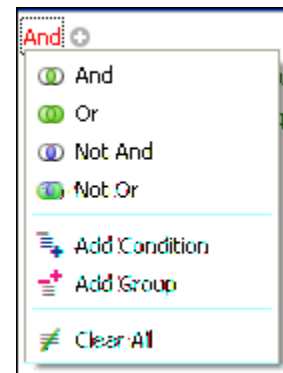
A filter can be edited by choosing the “Filter Editor”. The Filter Editor is found in the lower right hand corner of the editor panel or on the right click column header menu. The Filter Editor allows tailoring the filter to fit the user’s needs.



The Filter Builder allows the user to modify the filter by adding additional filter features or by changing the choices.



In this example, the “And” can be changed using the choices in this list. In addition, any column (Local Runoff Class), condition (Equals) or domain (Low) can be modified in the Filter Editor (Filter Builder).



A filter will remain in effect even if the table is closed and then later re-opened. Filters must be manually removed by the user.

Although a filter temporarily removes records from the selected set, reports work on the selected set, not the filtered dataset.

This completed the chapter on Understanding the Table Layout.

Chapter 6: Overview of Editing Concepts

This lesson covers the basic editing functions that are available in NASIS. A review of Chapter 2 “Working in NASIS Windows” may be necessary to understand the icons and menu options for editing the data. NASIS 6.0 is a client-server application that is read-only, therefore, before editing, data must be “Checked Out” from the National server.

Editing Concepts

The Local Database and the Selected Set are “Read-Only”, therefore the editing concept in NASIS has changed. The editing steps are:

1. Data is downloaded from the National Database to the Local Database
2. Data is loaded from the local database into the selected set
3. Data is filtered to identify rows to be edited.
4. Data is “Checked Out” (a lock is placed on the national database)
5. Data is edited
6. Data is “Upload All Changes to National Database” (data is saved)
7. Data is “Checked In” (lock is released at the national database)

Step 1: Loading the Local Database

Refer to Chapter 4 Building a Selected Set

Step 2: Selected Set.

Using standard queries, build the selected set. It may contain the entire MLRA dataset or a specific query can be used to filter the data. This exercise will use the filtering tools available in the NASIS interface to narrow the data to be edited.

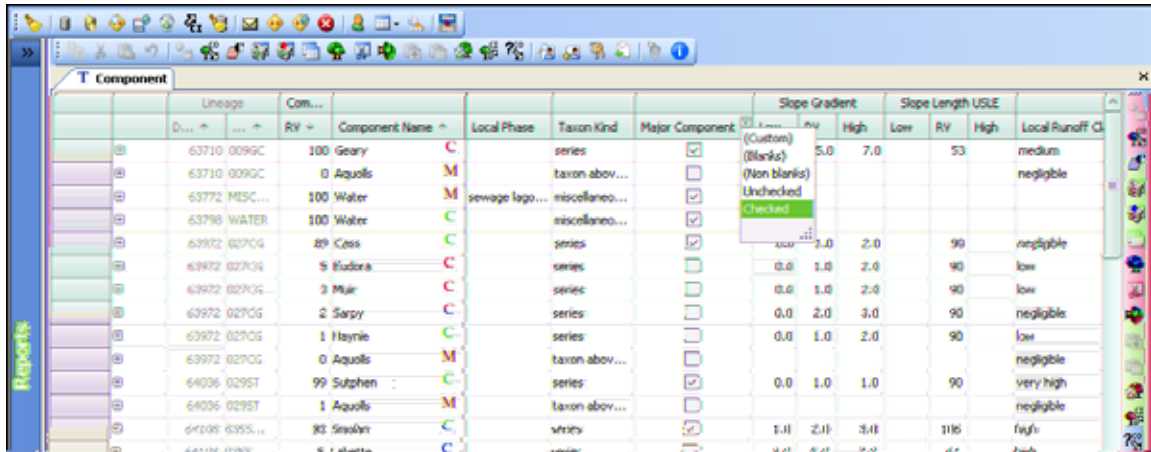
Component	Language	Seq	Low	RV	High	Component Name	Local Phase	Taxon Kind	Major Component	SSR phase - obsolete
63710 0090C				100		Geary	C	series		MAAT>50
63710 0090C			0	0	1	Aquills	M	taxon above family		
63772 0030BL				100		Water	M	sewage lagoons		
63796 0030BL				100		Water	C	miscellaneous area		
63872 0070C				89		Cass	C	series		
63872 0070C				5		Eukera	C	series		
63872 0070C				3		Mur	C	series		
63872 0070C				2		Sargy	C	series		
63872 0070C				1		Havite	C	series		
63872 0070C			0	0	1	Aquills	M	taxon above family		
64036 02007				99		Stephen	C	series		
64036 02007			0	1	2	Aquills	M	taxon above family		
64106 0030A.DG				90		Smolan	C	series		
64106 0030A.DG				5		Labette	C	series		
64106 0030A.DG				5		Narge	C	series		
64106 0030A.DG			0	0	1	Aquills	M	taxon above family		
64166 0410C				100		CHETE	P	series		
64270 0400C				100		Orele	C	series		MAP>25
64270 0400C				100		Hobbs	C	series		MAP>25
64270 0400C			0	0	1	Aquills	M	taxon above family		
64270 0400C				70		Lancaster	C	series		
64270 0400C				30		Hedville	C	series		
64270 0400C			0	0	1	Aquills	M	taxon above family		
64300 0400C				100		McCook	C	series		MAP>17
64300 0400C			0	0	1	Aquills	M	taxon above family		
64300 0400C				100		Solomon	C	series		MAAT>50
64300 0400C				100		MSB	P	series		
64419 0030C				100		Orele	C	series		
64419 0030C			0	0	1	Aquills	M	taxon above family		

NASIS User Guide

The Table Layout is easily modified to fit user's needs. Each column header has a funnel icon used to filter data for that column.

Step 3: Filter data

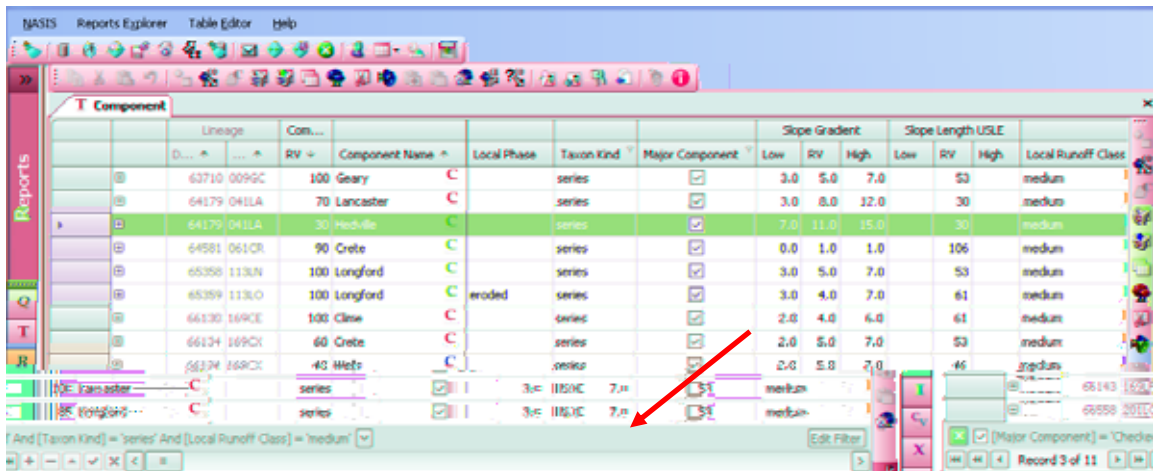
Using the Filter functions, the selected set is tailored specific to the data to be edited:



The screenshot shows the NASIS Table Editor interface. A data table is displayed with columns: Lineage, Component Name, Local Phase, Taxon Kind, Major Component, Slope Gradient, Slope Length USLE, and Local Runoff Class. A dropdown menu is open over the 'Major Component' column, showing options: (Custom), (Blanks), (Non blanks), Unchecked, and Checked. The 'Checked' option is highlighted.

Lineage	Component Name	Local Phase	Taxon Kind	Major Component	Slope Gradient	Slope Length USLE	Local Runoff Class
63710 009GC	100 Geary	C	series	<input checked="" type="checkbox"/>	5.0	7.0	53 medium
63710 009GC	0 Aqualis	M	taxon above...	<input type="checkbox"/>			negligible
63772 MISC...	100 Water	M	sewage lago...	<input checked="" type="checkbox"/>			
63798 WATER	100 Water	C	miscellaneous...	<input checked="" type="checkbox"/>			
63972 027OG	89 Cass	C	series	<input checked="" type="checkbox"/>	1.0	2.0	90 negligible
63972 027OG	5 Hudson	C	series	<input type="checkbox"/>	0.0	1.0	90 low
63972 027OG	3 Muir	C	series	<input type="checkbox"/>	0.0	1.0	90 low
63972 027OG	2 Sarpy	C	series	<input type="checkbox"/>	0.0	2.0	90 negligible
63972 027OG	1 Haynie	C	series	<input type="checkbox"/>	0.0	1.0	90 low
63972 027OG	0 Aqualis	M	taxon above...	<input type="checkbox"/>			negligible
64036 029ST	99 Sutphen	C	series	<input checked="" type="checkbox"/>	0.0	1.0	90 very high
64036 029ST	1 Aqualis	M	taxon above...	<input type="checkbox"/>			negligible
64105 035S...	80 Seashen	C	series	<input checked="" type="checkbox"/>	1.0	2.0	106 high

Further filtering is added to produce a filtered selected set suitable for the users needs in editing.



The screenshot shows the NASIS Table Editor interface with a filtered data table. The filter string at the bottom is: "And [Taxon Kind] = 'series' And [Local Runoff Class] = 'medium'". The table displays only rows that match this filter. A red arrow points to the 'Major Component' column header.

Lineage	Component Name	Local Phase	Taxon Kind	Major Component	Slope Gradient	Slope Length USLE	Local Runoff Class
63710 009GC	100 Geary	C	series	<input checked="" type="checkbox"/>	3.0	5.0	7.0 53 medium
64179 041LA	70 Lancaster	C	series	<input checked="" type="checkbox"/>	3.0	8.0	32.0 30 medium
64179 041LA	30 Medville	C	series	<input checked="" type="checkbox"/>	7.0	11.0	15.0 30 medium
64581 061OR	90 Crete	C	series	<input checked="" type="checkbox"/>	0.0	1.0	1.0 106 medium
65358 113LN	100 Longford	C	series	<input checked="" type="checkbox"/>	3.0	5.0	7.0 53 medium
65359 113LO	100 Longford	C	eroded	<input checked="" type="checkbox"/>	3.0	4.0	7.0 61 medium
66130 169CE	100 Clare	C	series	<input checked="" type="checkbox"/>	2.0	4.0	6.0 61 medium
66134 169CI	60 Crete	C	series	<input checked="" type="checkbox"/>	2.0	5.0	7.0 53 medium
66134 169CI	40 Wells	C	series	<input checked="" type="checkbox"/>	2.0	5.0	7.0 46 medium

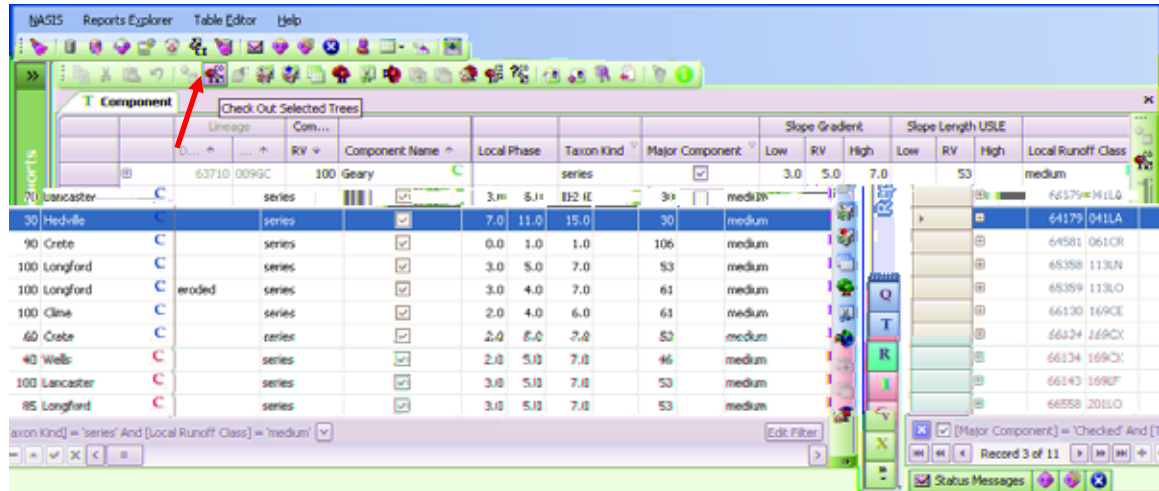
Notice the Filter string is built and displayed at the bottom of the Edit panel and above the Status panel. This filter string can be edited using the "Edit Filter" button on the lower right corner of the Editor panel. This data is filtered to include "major components" that are "series" and have a local runoff of "medium".

For this exercise, the result includes soils that are being reviewed for proper placement into the "medium" local runoff class. The highlighted row is questionable in the medium runoff. The next step is to edit the data.

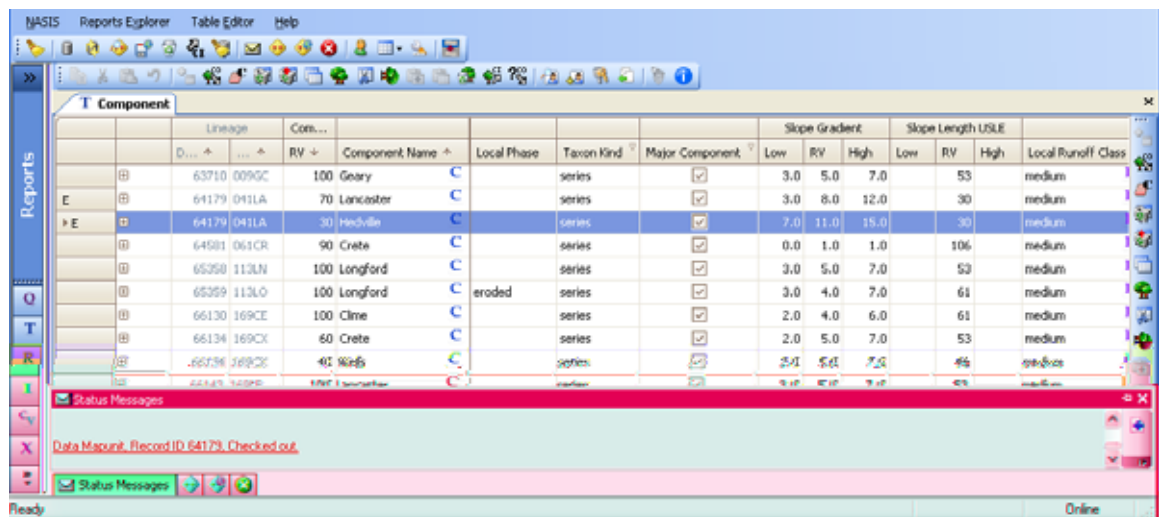
NASIS User Guide

Step 4: Check Out data

This step presumes that the user has permissions to edit the data. The user must be in the Group that owns the data. The row(s) is (are) highlighted and the data is “Checked out”. The Table Editor menu or toolbar and Table toolbar all contain an icon used to check out the data.



The Check Out is confirmed in the Status Messages panel and the row is marked as “Editable” with an “E”.

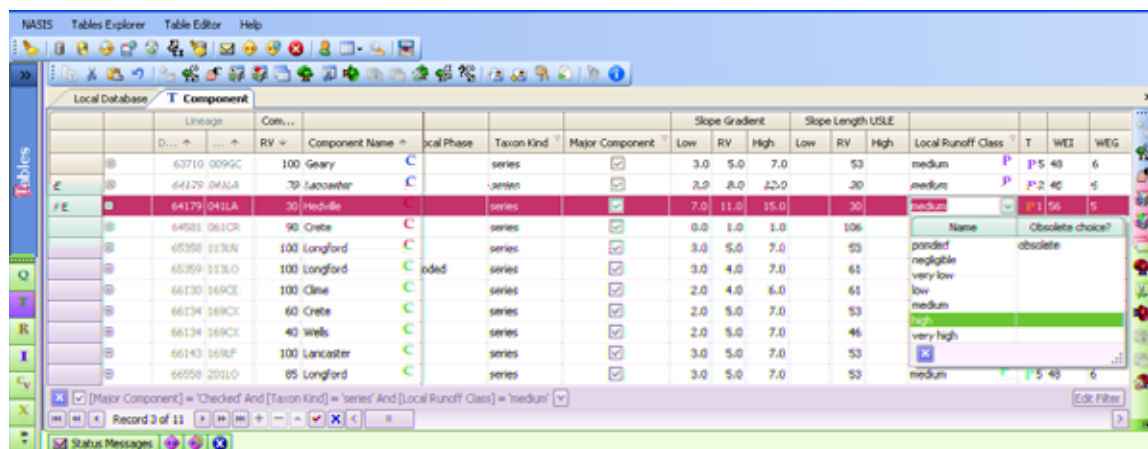


Notice, the two components in this view are members of the same Data Mapunit. It is the Data Mapunit that is checked out. The components are within the specific Data Mapunit and therefore are both marked for edit.

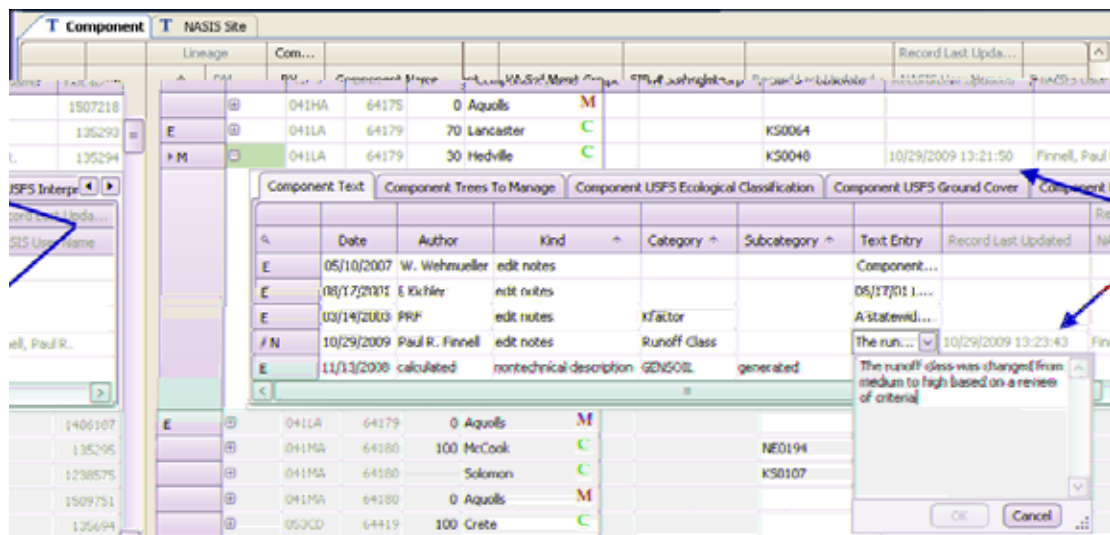
NASIS User Guide

Step 5: Edit data

A choice list is available for most fields and is used to correct the data field (choice lists only appear if the data is checked out and editable):



The edit is saved to the local database when the cursor is moved from the field or when the “End Edit” icon has been selected. Before leaving the table, the edit must be documented. ALL edits will be documented in the appropriate Text table. The Text table will provide documentation of the data elements that were edited. Each edited record will have a time and author stamp. A corresponding record should appear in the Text table identifying what the author edited on the specific date.



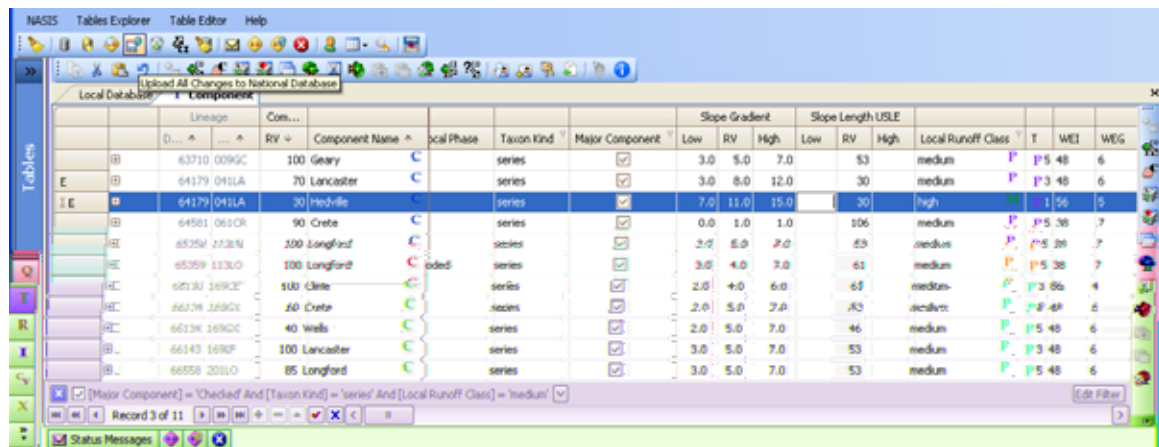
Note the Status changed from **P** (prior) to **M** for a manual entry.

T Component		T NASIS Site									
		Lineage		Com...			Slope Length USLE				
		...	DM...	RV	Component Name	RV	RV	High	Local Runoff Class	T	WEI
		041HA	64175	0	Aquolls	M			negligible	P	
E		041LA	64179	70	Lancaster	C	30		medium	P	48
M		041LA	64179	30	Hedville	C	30		high	M	56
E		041LA	64179	0	Aquolls	M			negligible		
		041MA	64180	100	McCook	C	90			P	86

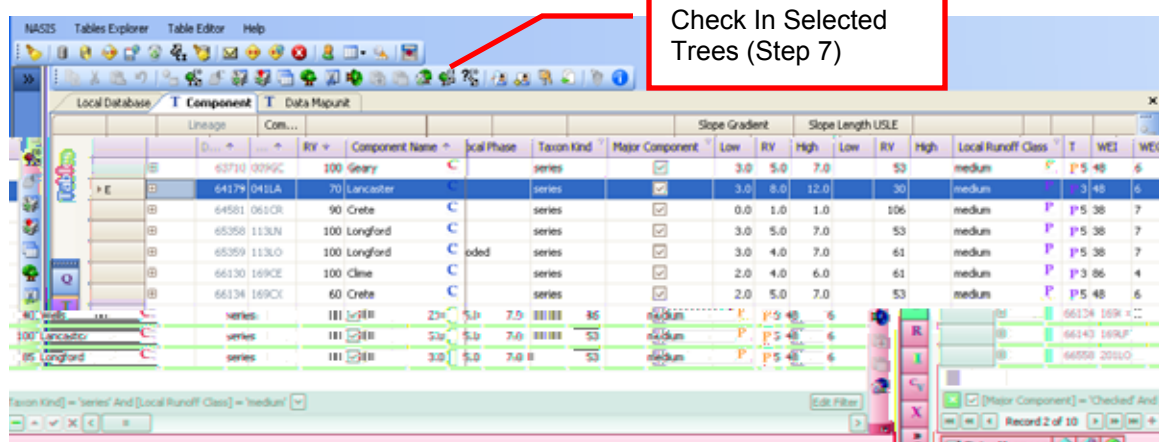
NASIS User Guide

Step 6: Send edits to National database

The edited data is saved to the National database using the “Upload All Changes to National Database” on the NASIS menu or NASIS toolbar.



The edited row was modified from “medium” to “high”. After saving, this row no longer appears in the filtered selected set. The filter must be removed to view the edited Component.



The filter is still active and includes only those components with “medium” local runoff class. The filtered “Hedville” component is still marked with an “E” and can still be edited. The changes were saved to the local database, and uploaded to the national database, but, the data is still available to edit.

Step 7: Check In data

After the edited data is saved (to the local database and sent to the national database) it must be returned (Checked In) to the national database. The row is highlighted and the menu or toolbar icon “Check In (CI)” is used to check in the data.

NOTE: Although the “Hedville” component is the item being edited, it is a member of the Data Mapunit “041LA”. Edit permission is set at the object’s parent table – the Data Mapunit in this case. When the Data Mapunit table is opened and the component child table is opened, the user will see that all rows are marked with the “E”.

NASIS User Guide

Local Database | Component | Data Mapunit

Check In Selected Trees

DMU Description	Prod Index	DMU NASIS Site	NASIS Site Name	NASIS Group Name	Object Last Updated	NASIS User Name	Record Last Updated	NASIS User Name	Rec ID
041LA		MLRA05_Office	5-8 Salina, Kansas	06/10/2009 08:15:53	Finnell, Paul R.				64179

Component: Data Mapunit Certification History Data Mapunit Crop Yield Data Mapunit Test

Com...	RV	Component Name	Local Phase	Taxon Kind	Major Component	Slope Gradient	Local Runoff Class	T	WEF	WEG	Erosion Class
70 Lancaster				series		3.0 8.0 12.0 medium		P	56	6	
30 Hedville				series		7.0 11.0 15.0 high		M			
0 Aguila				taxon above family		negligible		P			

Status Messages

Preparing query "Area/Unmapunit/Mapunit/Datamapunit by Area Symbol"...

Running national query for target table "Legend"...

Number of data objects found:

Legend: 33

Mapunit: 14306

Data Mapunit: 7274

Site: 121

Pedon: 122

Transect: 5

Upload completed without any conflicts.

Final result:

The data is now returned to the national database (checked in) and the "E" is removed from the row. The lock is now released from the national database:

Local Database | Component | Data Mapunit

DMU Description	Prod Index	DMU NASIS Site	NASIS Site Name	NASIS Group Name	Object Last Updated	NASIS User Name	Record Last Updated	NASIS User Name	Rec ID
041LA		MLRA05_Office	5-8 Salina, Kansas	06/10/2009 08:15:53	Finnell, Paul R.				64179
041MA		MLRA05_Office	5-8 Salina, Kansas	06/12/2009 10:33:19	Wehmueller, Bill				64180
041MB		MLRA05_Office	5-8 Salina, Kansas	02/23/2009 09:16:57	Rensley, Chad				64181
053CD		MLRA05_Office	5-6 Hays, Kansas	06/12/2009 10:33:28	Wehmueller, Bill				64419
053TO		MLRA05_Office	5-8 Salina, Kansas	06/12/2009 10:33:29	Wehmueller, Bill				64439
061CR		MLRA05_Office	5-8 Salina, Kansas	06/12/2009 10:33:31	Wehmueller, Bill				64581
061LM		MLRA05_Office	5-9 Clinton, Missouri	06/12/2009 10:33:31	Wehmueller, Bill				64596
061MJ		MLRA05_Office	5-8 Salina, Kansas	06/12/2009 10:33:31	Wehmueller, Bill				64602
061SH		MLRA05_Office	5-8 Salina, Kansas	12/12/2003 10:05:03	Finnell, Paul R.				64610

Status Messages

Preparing query "Area/Unmapunit/Mapunit/Datamapunit by Area Symbol"...

Running national query for target table "Legend"...

Number of data objects found:

Legend: 33

Mapunit: 14306

Data Mapunit: 7274

Site: 121

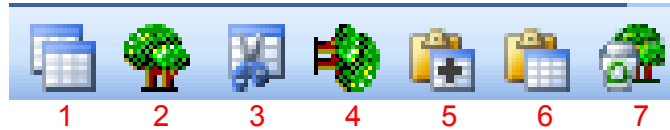
Pedon: 122

Transect: 5

Upload completed without any conflicts.

Copy, Cut and Paste Data

NASIS includes the ability to copy data, cut data and to paste data. The database contains parent and child tables. In some instances it may be necessary to perform these functions on the entire object versus the particular row of data. The following paragraphs are in sequence with the icons in this image:



1. The **“Copy Selected Rows”** command places a duplicate of the selected rows, with no associated child record, onto the clipboard. For instance, if a row in the Data Mapunit is selected then only that one row of data is placed on the clipboard.

2. The **“Copy Selected Tree”** command places a duplicate of the selected row(s), including all associated child records, onto the clipboard. No changes are made to original data when it is copied. For instance, if a row in the Data Mapunit is selected and the tree is copied, then the Data Mapunit and all its components, component child tables and all of their horizons and horizon child tables will be placed on the clipboard.

3. The **“Cut Selected Rows”** command places a duplicate of the selected row(s), with **no** associated child record(s), onto the clipboard. It then marks the highlighted row for deletion. If a record in a Parent table is selected, then only that one record is placed on the clipboard, but the entire set of parent and child records are marked for deletion.

4. The **“Cut Selected Tree”** command places a duplicate of the selected row(s), including all associated child records, onto the clipboard and marks the highlighted tree for deletion. No changes are made to original data when it is copied. For instance, if a row in the Data Mapunit is selected and the tree is cut, then the Data Mapunit and all its components, component child tables and all of their horizons and horizon child tables will be placed on the clipboard and the Data Mapunit will be marked for deletion.

The use of either copy function allows any data to be copied, including data the user does not own or data that is locked. However, use of the cut feature on a record the user does not own or on data that is not checked out will fail since the data can not be marked for deletion.

5. The **“Paste Rows/Trees (Inserting New Rows)”** command transfers the data that has been placed onto the clipboard into the selected table(s) by inserting a new row or tree within the assigned table.

6. The **“Paste Rows/Trees (Replacing Selected Rows)”** command transfers the data that has been placed onto the clipboard into the selected table(s) by marking a new row or tree within the assigned table.

7. The **“Discard Changes in Selected Trees”** will discard all changes (edits) in the current table since they were last

- a. checked out,
- b. had changes uploaded to the national database, or
- c. had changes discarded.

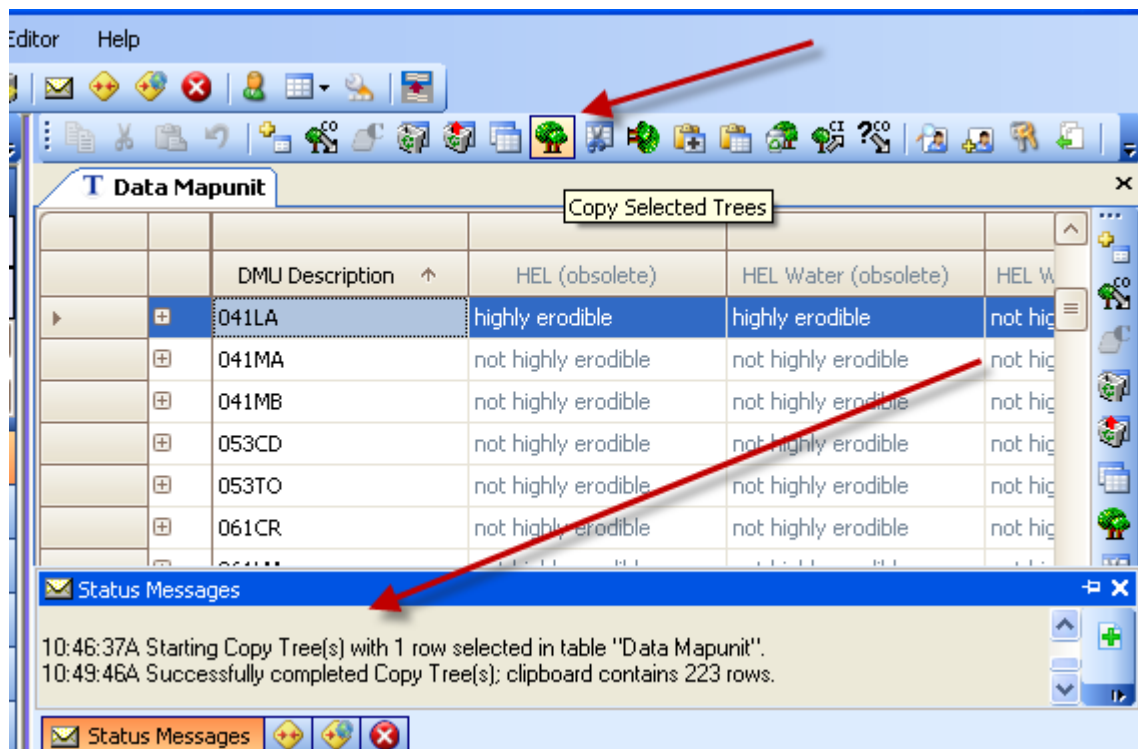
Copy Selected Row or Selected Tree

The Table Editor menu and Table Editor toolbar icons become active when data exists in the Editor Panel.

Highlight a row within the Data Mapunit table. The decision is to either copy that specific record (Copy Rows) or Copy that specific record and all child records (Copy Trees).

The icon for Copy Selected Record is the two spreadsheets.

The icon for Copying Selected Trees is two trees:

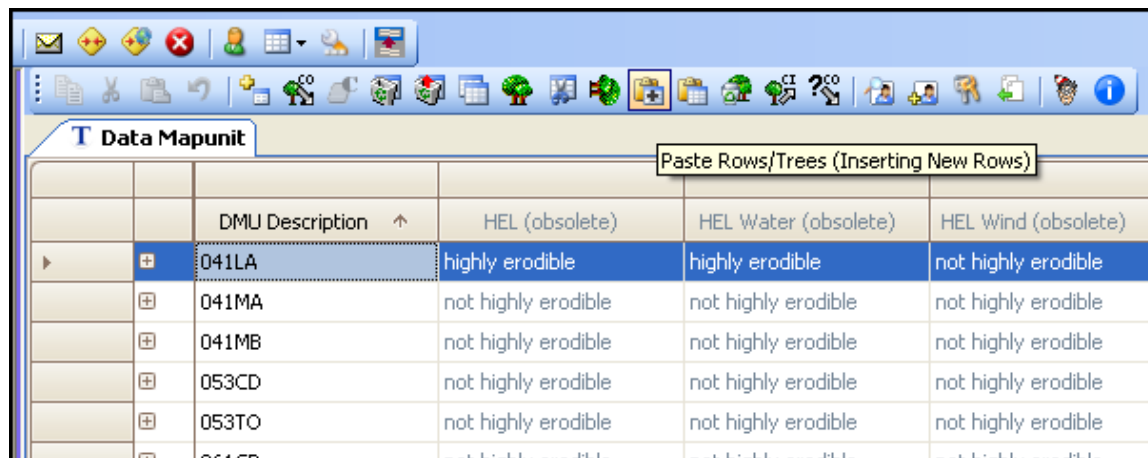


A "**Tree**" in NASIS is the parent and its children. In this case, the parent is copied (the Data Mapunit) along with all its children (Component and Horizon tables and child tables). Upon completion, the Status box will identify the time used to copy all rows. This is followed by pasting the record.

Paste Rows/Trees

There are two PASTE options;

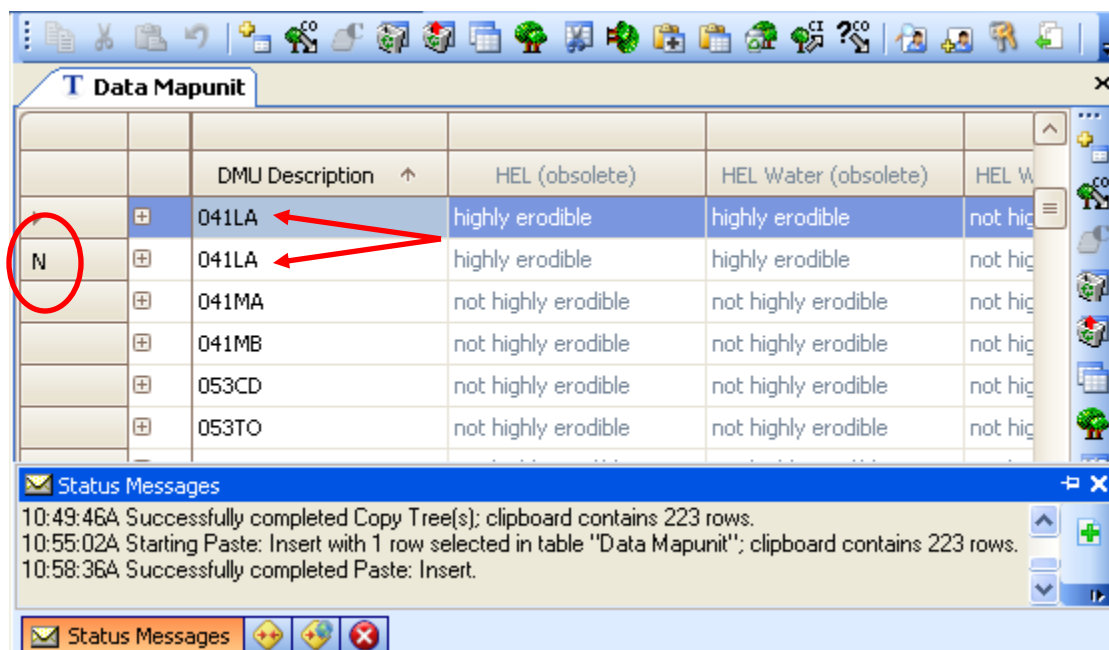
1. *Paste Rows/Trees (Inserting New Rows)*



The screenshot shows the 'Data Mapunit' window with a table containing several rows. The menu 'Paste Rows/Trees (Inserting New Rows)' is highlighted. The table has the following data:

	DMU Description ↑	HEL (obsolete)	HEL Water (obsolete)	HEL Wind (obsolete)
+	041LA	highly erodible	highly erodible	not highly erodible
+	041MA	not highly erodible	not highly erodible	not highly erodible
+	041MB	not highly erodible	not highly erodible	not highly erodible
+	053CD	not highly erodible	not highly erodible	not highly erodible
+	053TO	not highly erodible	not highly erodible	not highly erodible

Choose “Paste Rows/Trees (Inserting New Rows)”. Completion messages will appear in the status panel. A new record will be added to the table with a status of “N” for New.



The screenshot shows the 'Data Mapunit' window after pasting. A new record with status 'N' has been added to the table. Red arrows point to the 'N' status and the new row. The status message panel at the bottom shows the following messages:

10:49:46A Successfully completed Copy Tree(s); clipboard contains 223 rows.
 10:55:02A Starting Paste: Insert with 1 row selected in table "Data Mapunit"; clipboard contains 223 rows.
 10:58:36A Successfully completed Paste: Insert.

	DMU Description ↑	HEL (obsolete)	HEL Water (obsolete)	HEL W
N	041LA	highly erodible	highly erodible	not hig
+	041LA	highly erodible	highly erodible	not hig
+	041MA	not highly erodible	not highly erodible	not hig
+	041MB	not highly erodible	not highly erodible	not hig
+	053CD	not highly erodible	not highly erodible	not hig
+	053TO	not highly erodible	not highly erodible	not hig

NASIS User Guide

This new record is an exact copy of the parent record:

DMU Description	HEL (obsolete)	HEL Water (obsolete)	HEL Wind (obsolete)	DMU NASIS Site	NASIS Group	Object Loc
0411A	highly erodible	highly erodible	not highly erodible	MLRA05_Office	5-8 Salina, Kansas	09/10/200
Component						
Data Mapunit Certification History						
Data Mapunit Crop Yield						
Data Mapunit Text						
Co...	Component Name	Local Phase	Taxon Kind	Major Component	Slope Gradient	
	70 Lancaster	C	series	<input checked="" type="checkbox"/>	3.0 8.0 12.0 medium	P P 3 4
	30 Hedville	C	series	<input checked="" type="checkbox"/>	7.0 11.0 15.0 high	M P 1 5
	0 Aquolls	M	taxon above family	<input type="checkbox"/>	negligible	P

Edits can be made on the new data. The edits are then uploaded to the National Database and finally all data is “Checked In”.

2. Paste Rows/Trees (Replacing Selected Rows)

Assume there is a more complete Hedville component populated in another Data Mapunit that could replace the current. In this example, a Hedville component is copied from another Data Mapunit and the existing is replaced.

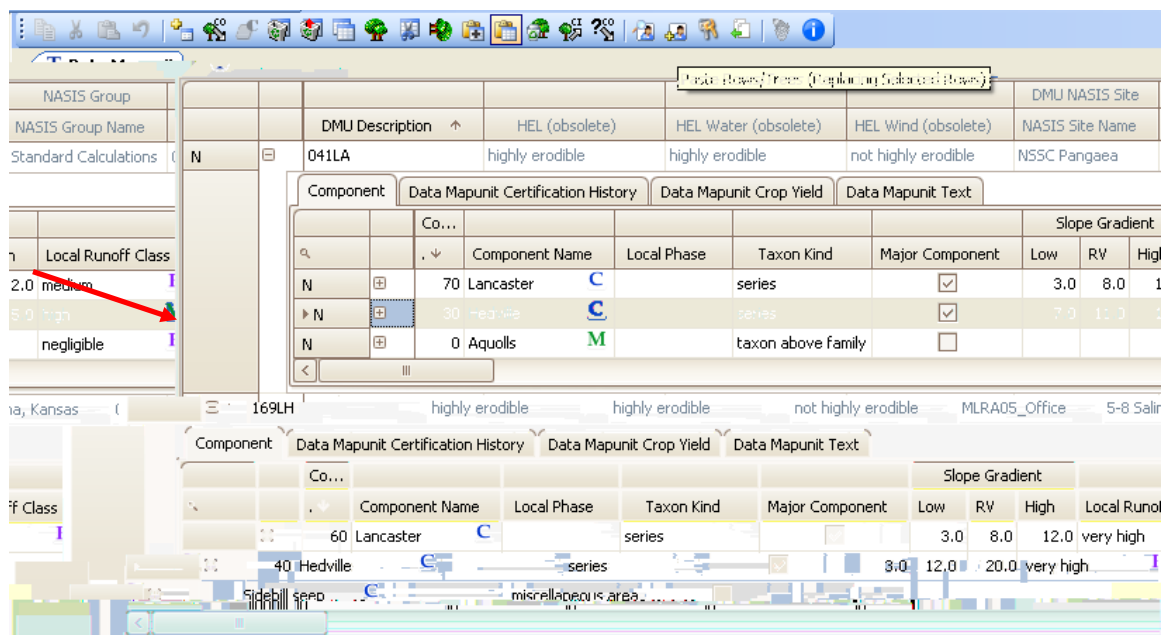
Highlight the row and select “Copy Selected Trees”(Component and all child tables):

DMU Description	HEL (obsolete)	HEL Water (obsolete)	HEL Wind (obsolete)	NASIS Site Name	NASIS Group Name	Object Loc
0411A	highly erodible	highly erodible	not highly erodible	NSSC Pangaea	Standard Calculations	09/2
Component						
Data Mapunit Certification History						
Data Mapunit Crop Yield						
Data Mapunit Text						
Co...	Component Name	Local Phase	Taxon Kind	Major Component	Slope Gradient	
N	70 Lancaster	C	series	<input checked="" type="checkbox"/>	3.0 8.0 12.0 medium	P
N	30 Hedville	C	series	<input checked="" type="checkbox"/>	7.0 11.0 15.0 high	M
N	0 Aquolls	M	taxon above family	<input type="checkbox"/>	negligible	P

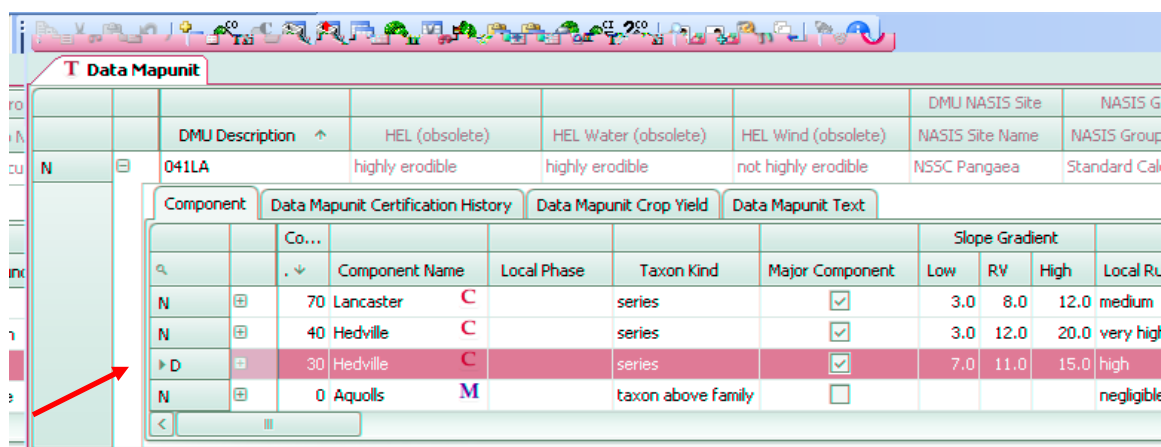
DMU Description	HEL (obsolete)	HEL Water (obsolete)	HEL Wind (obsolete)	MLRA05_Office	5-8 Salina, Kansas	02/2
169LH	highly erodible	highly erodible	not highly erodible	MLRA05_Office	5-8 Salina, Kansas	02/2
Component						
Data Mapunit Certification History						
Data Mapunit Crop Yield						
Data Mapunit Text						
Co...	Component Name	Local Phase	Taxon Kind	Major Component	Slope Gradient	
	60 Lancaster	C	series	<input checked="" type="checkbox"/>	3.0 8.0 12.0 very high	P
	40 Hedville	C	series	<input checked="" type="checkbox"/>	3.0 12.0 20.0 very high	P
	Sidehill seep	C	miscellaneous area	<input type="checkbox"/>		

NASIS User Guide

Highlight the row to be replaced and click
“Paste Row/Trees (Replacing Selected Rows)”:

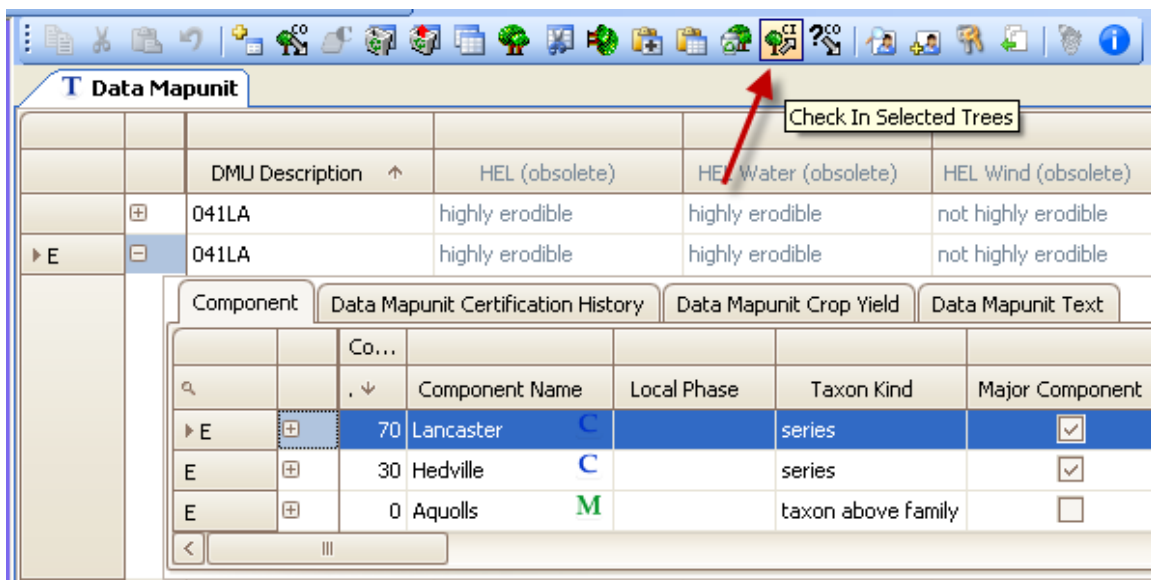


The result of the Paste is the new Component, and its child tables, is pasted and the highlighted Component row is marked for deletion:



To finish this edit, the composition is edited to “30”. The data is then saved using
“Upload to National Database” on the NASIS menu. And, the data is “Checked In”:

NASIS User Guide



This completes the process steps for Pasting Rows and Trees.

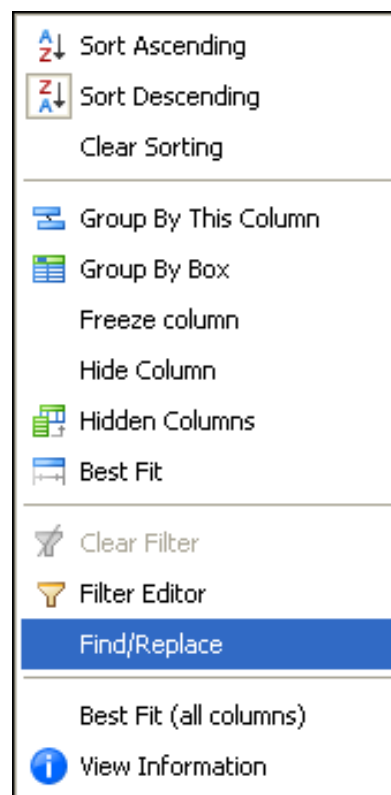
Using Find/Replace

The Global Assign function has been replaced with the “Find/Replace” option. This option is located on the Right Click menu on the column header.

The key to using this function is to filter the selected set to include only those records in which the action will be performed. AND, since this is an edit function, the data to be edited MUST be Checked Out.

The Find/Replace differs from the paste option in that Paste works on the entire row, while Find/Replace works on an individual column.

With the Find/Replace command, a global edit can be performed on a specific data element value, such as changing a Master horizon designation from “H” to “A” for the same components in all data map units, or changing the T value for a group of selected soils.



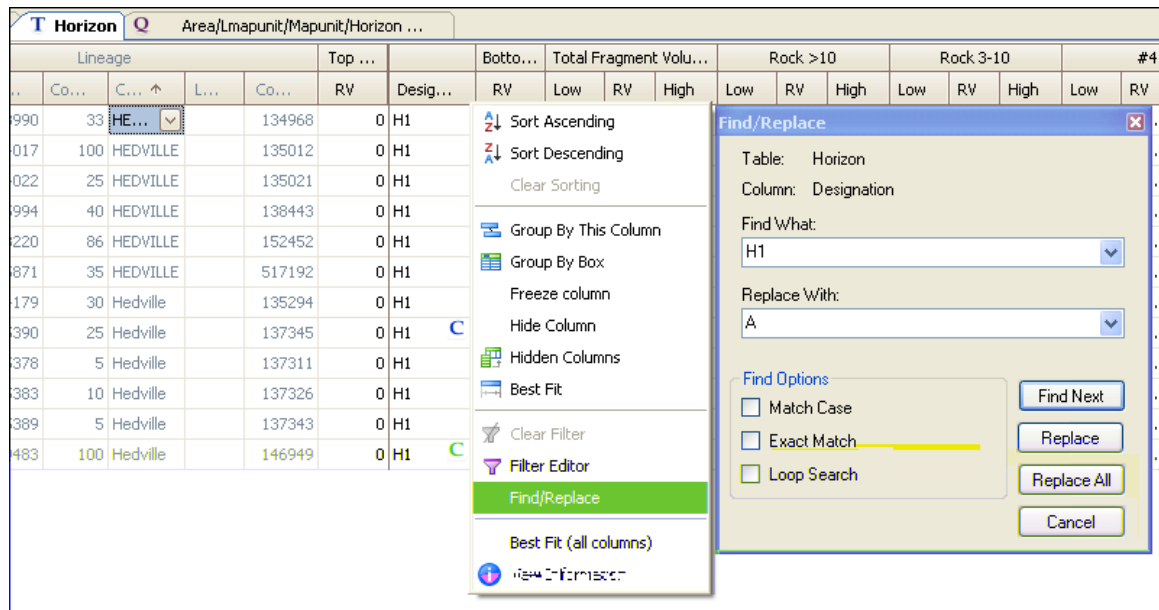
The first step is to filter the selected set. The selected set is filtered to include only the Hedville components. It is further filtered to include only the “H1” horizons.

The second step is to “check out” the data to be edited.

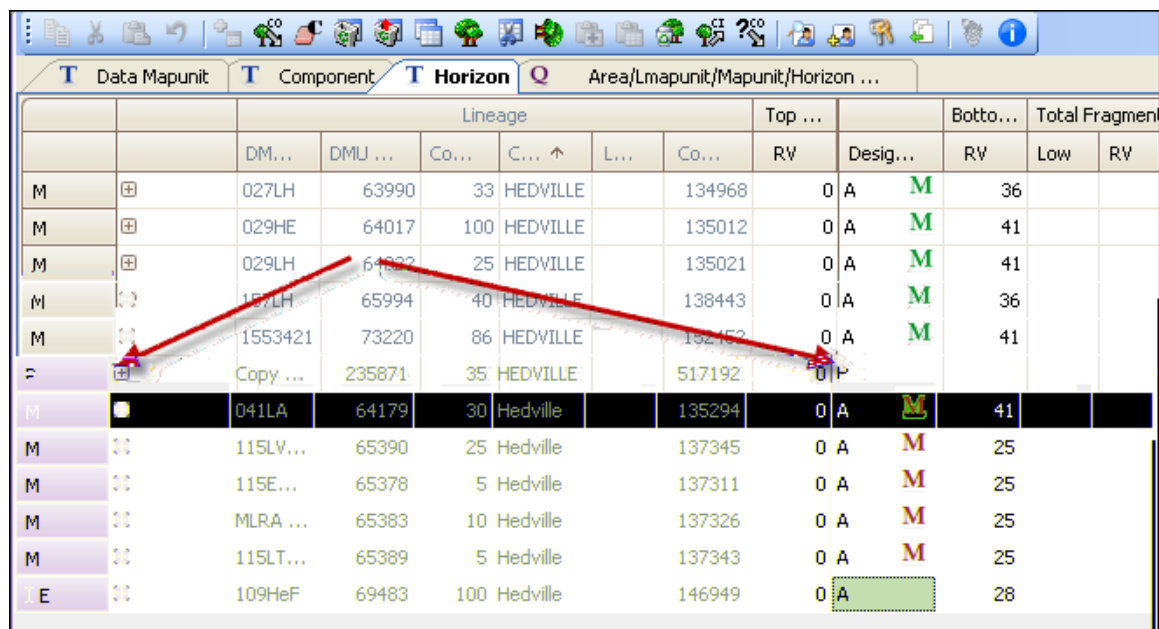
Data Mapunit Component Horizon Area/Lmapunit/Mapunit/Horizon ...													
Data...		Total Fragn...				Lineage						Top ...	
TM	Low	TM	High			DM...	DMU ...	Co...	C... +	L...	Co...	RV	Design...
36				E	00	027LH	63990	33	HEDVILLE		134968	0 H1	
41				E	00	029HE	64017	100	HEDVILLE		135012	0 H1	
41				E	00	029LH	64022	25	HEDVILLE		135021	0 H1	
36				E	00	157LH	65994	40	HEDVILLE		138443	0 H1	
41				E	00	1553421	73220	86	HEDVILLE		152452	0 H1	
28				P	00	Copy ...	235871	35	HEDVILLE		517192	0 H1	
36				M	00	027LH	63990	33	HEDVILLE		134968	0 H1	
25				E	00	115LV...	65390	25	Hedville		137345	0 H1	
25				E	00	115E...	65378	5	Hedville		137311	0 H1	
25				E	00	MLRA ...	65383	10	Hedville		137326	0 H1	
25				E	00	115LT...	65389	5	Hedville		137343	0 H1	
28				E	00	109HeF	69483	100	Hedville		146949	0 H1	

NASIS User Guide

Using the “right-click” menu on the Designation column, Find/Replace is chosen. In the Find/Replace parameter box, the edits are made to replace the ‘H1’ with ‘A’.



Find/Replace only works on those records in which the user is a member of the ownership group and only on those records that are “Checked Out”. Records in the selected set that are owned by another group or not checked out will not be modified. The edit will ignore the records in which the user is not a member of the ownership group. Edits can not be made on data that is “Locked”; if a record in the selected set is checked out by another user. NASIS will display a message indicating that at least one record is locked and the global operation fails on that record.



Notice the “H1” changed to “A” on all “checked out” records but not the Protected record.

Find/Replace issues:

Data in NASIS6 tables can be

1. sorted
2. filtered, or
3. grouped.

It is important to remember that the Find/Replace works on those records that are “Checked Out”, only.

It is important to remember that data is “Checked Out” at the Object’s Parent table. For example, if the decision is to edit a specific component name (e.g. Hedville) the data is checked out at the Data Mapunit so ALL components in those Data Mapunit are checked out, also.

Filter

In this scenario the data was filtered before using of the Find/Replace. When data is filtered, then only that data appears in the selected set. Since the “Hedville” component is the only data in the selected set then it is the only data that will be edited.

Sorting

Consider the “Sorting” of a table. If the component table is sorted and the Hedville components are highlighted and “checked out”, then all other components within the Data Mapunit in which the Hedville component belongs are also “checked out”. Therefore, the selected set will include “checked out” components other than the Hedville components. A Find/Replace command will affect all components that are checked out in the selected set. To keep the edit from affecting any other checked out components, those other components must be removed from the selected set.

Grouped

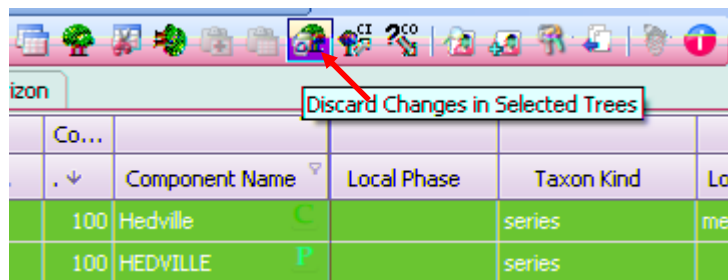
Consider the grouped data. Similar to the sorting of data, however the checked out data may not appear in the specific group in which the edit is to be made. If a Find/Replace function is made on a selected set that is grouped, then the Find/Replace will impact all checked out records. If there are records hidden in other groups that are checked out, then all checked out records in the selected set will be affected.

Verify your selected set prior to using the Find/Replace command.

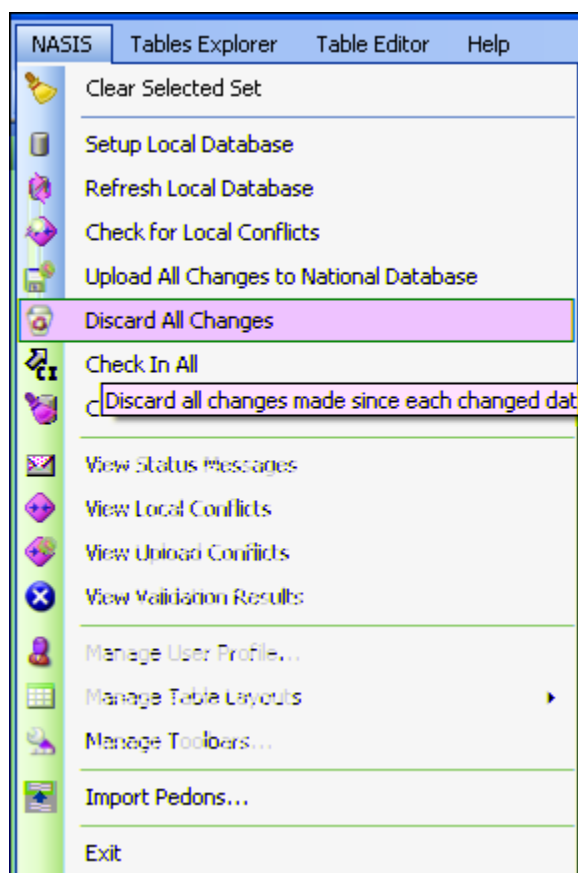
NASIS User Guide

Discard All Changes

If after performing an edit or a Find/Replace edit, the user realizes that records were inadvertently changed, the user can use the “Discard Changes” found on the Editor toolbar



Or using the Table Editor menu



Using Global Paste

The Global Paste is a function that copies data from one child table and pastes that data to all occurrences of that child table within the selected set that are “checked out”. It is not explained or addressed in the NASIS menus or toolbars. This function is one that is only explained here in this chapter. The steps involved in this function are:

1. The selected set is filtered to include only those records to be edited
2. The child table is opened for that one record to be copied
3. The rows from that child table are copied
4. The cursor is placed in the Parent table
5. The “Paste Rows/Trees” is activated
6. The dialog box appears and the user defines the paste function

In this scenario, the Component data has been filtered to a specific component name and the data has been “Checked Out”:

T Legend T Mapunit T Data Mapunit T Component										
		Lineage	Com...					Slope Gradient		
		DMU...	RV	Component Name ▾	Local Phase	Taxon Kind	Major Component	Low	RV	High
E	+	169LO	100	Longford		series	<input checked="" type="checkbox"/>	3.0	5.0	7.0
E	+	169LM	100	Longford		series	<input checked="" type="checkbox"/>	1.0	2.0	3.0
E	+	113LO	100	Longford	eroded	series	<input checked="" type="checkbox"/>	3.0	4.0	7.0
▶ E	+	113LN	100	Longford		series	<input checked="" type="checkbox"/>	3.0	5.0	7.0

The Component Crop Yield child table is opened:

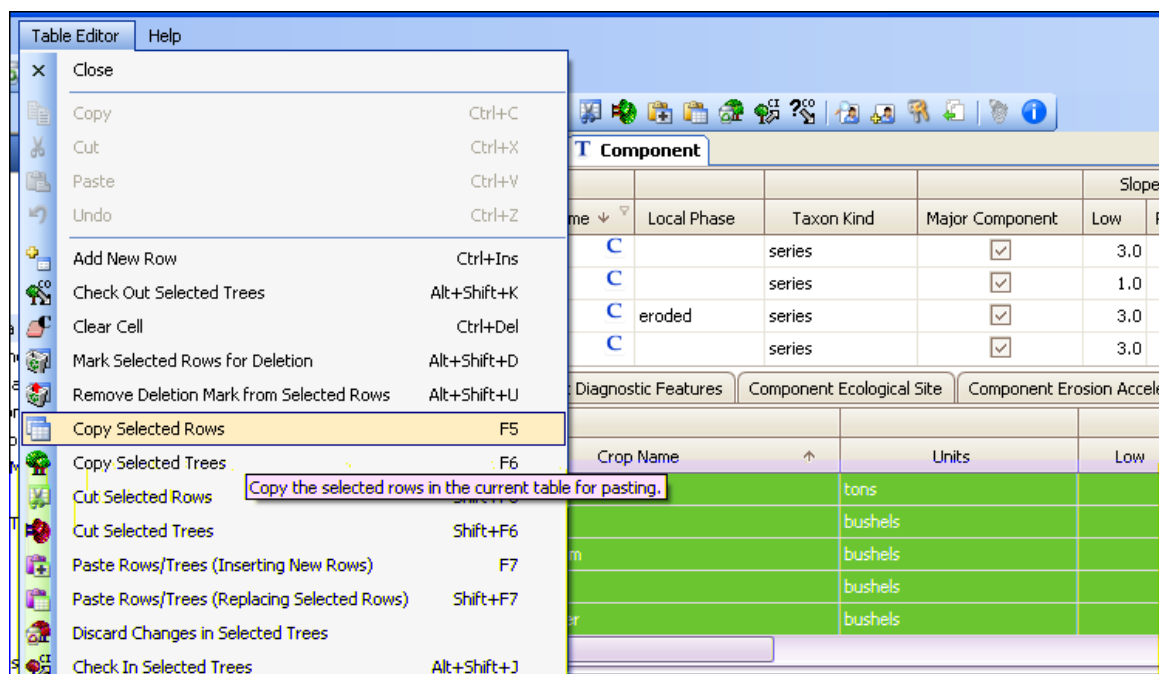
T Legend T Mapunit T Data Mapunit T Component													
		Lineage	Com...					Slope Gradient					
		DMU...	RV	Component Name ▾	Local Phase	Taxon Kind	Major Component	Low	RV	High	Local Runoff Class		T
E	+	169LO	100	Longford		series	<input checked="" type="checkbox"/>	3.0	5.0	7.0			P
E	+	169LM	100	Longford		series	<input checked="" type="checkbox"/>	1.0	2.0	3.0	high		P P
E	+	113LO	100	Longford	eroded	series	<input checked="" type="checkbox"/>	3.0	4.0	7.0	medium		P P
▶ E	+	113LN	100	Longford		series	<input checked="" type="checkbox"/>	3.0	5.0	7.0	medium		P P

Component Crop Yield Component Diagnostic Features Component Ecological Site Component Erosion Accelerated Component Existing Pla													
		Seq		Crop Name	Units			Nirr Yield					
								Low	RV	High			
▶ E				alfalfa hay	tons					2.50			
E				corn	bushels					55.00			
E				grain sorghum	bushels					63.00			
E				soybeans	bushels					22.00			
E				wheat, winter	bushels					33.00			

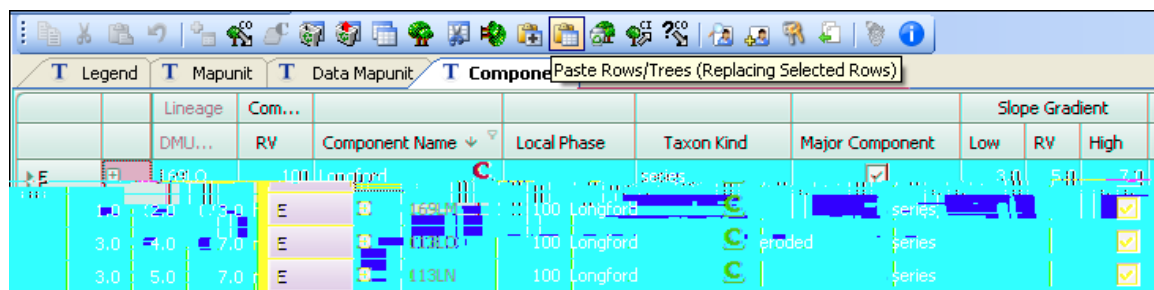
The decision is to copy the crop yield rows in DMU “113LN” and replace the existing data in the other 4 Longford components.

NASIS User Guide

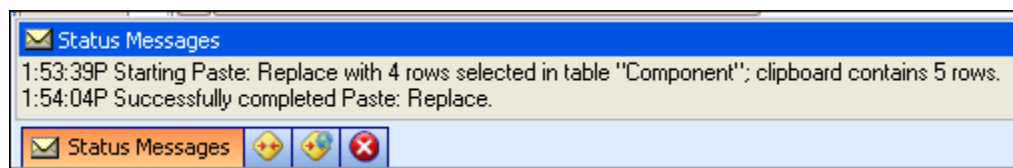
From the Table Editor Menu, or the Table Editor Toolbar, choose the Copy Selected Rows.



The records in the Parent table are then highlighted – in this case the 4 components are highlighted:



And using either the Table Editor Menu or the Table Editor Toolbar, the “Paste Rows/Trees (Replacing Selected Rows)” is chosen. The Status Message Panel will document the paste.



NASIS User Guide

The result is that all selected rows will have the Component Crop Yield table populated with the copied data and the existing data is marked for deletion:

T Legend T Mapunit T Data Mapunit T Component																																																																		
	Lineage	Com...					Slope Gradient																																																											
	DMU...	RV	Component Name	Local Phase	Taxon Kind	Major Component	Low	RV	High	Local Runoff Class																																																								
E	169LM	100	Longford	C	series	<input checked="" type="checkbox"/>	1.0	2.0	3.0	high																																																								
<div> <div>Component Crop Yield</div> <div>Component Diagnostic Features</div> <div>Component Ecological Site</div> <div>Component Erosion Accelerated</div> <div>Component Existing</div> </div> <table border="1"> <thead> <tr> <th></th> <th>Seq</th> <th>Crop Name</th> <th>Units</th> <th colspan="3">Nirr Yield</th> </tr> <tr> <th></th> <th></th> <th></th> <th></th> <th>Low</th> <th>RV</th> <th>High</th> </tr> </thead> <tbody> <tr> <td>D</td> <td></td> <td>grain sorghum</td> <td>bushels</td> <td></td> <td>55.00</td> <td></td> </tr> <tr> <td>D</td> <td></td> <td>wheat, winter</td> <td>bushels</td> <td></td> <td>35.00</td> <td></td> </tr> <tr> <td>N</td> <td></td> <td>corn</td> <td>bushels</td> <td></td> <td>55.00</td> <td></td> </tr> <tr> <td>N</td> <td></td> <td>grain sorghum</td> <td>bushels</td> <td></td> <td>63.00</td> <td></td> </tr> <tr> <td>N</td> <td></td> <td>soybeans</td> <td>bushels</td> <td></td> <td>22.00</td> <td></td> </tr> <tr> <td>N</td> <td></td> <td>wheat, winter</td> <td>bushels</td> <td></td> <td>33.00</td> <td></td> </tr> </tbody> </table>												Seq	Crop Name	Units	Nirr Yield							Low	RV	High	D		grain sorghum	bushels		55.00		D		wheat, winter	bushels		35.00		N		corn	bushels		55.00		N		grain sorghum	bushels		63.00		N		soybeans	bushels		22.00		N		wheat, winter	bushels		33.00	
	Seq	Crop Name	Units	Nirr Yield																																																														
				Low	RV	High																																																												
D		grain sorghum	bushels		55.00																																																													
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E	113LO	100	Longford	C	eroded	series	<input checked="" type="checkbox"/>	3.0	4.0	7.0 medium																																																								
<div> <div>Component Crop Yield</div> <div>Component Diagnostic Features</div> <div>Component Ecological Site</div> <div>Component Erosion Accelerated</div> <div>Component Existing</div> </div> <table border="1"> <thead> <tr> <th></th> <th>Seq</th> <th>Crop Name</th> <th>Units</th> <th colspan="3">Nirr Yield</th> </tr> <tr> <th></th> <th></th> <th></th> <th></th> <th>Low</th> <th>RV</th> <th>High</th> </tr> </thead> <tbody> <tr> <td>D</td> <td></td> <td>corn</td> <td>bushels</td> <td></td> <td>50.00</td> <td></td> </tr> <tr> <td>D</td> <td></td> <td>grain sorghum</td> <td>bushels</td> <td></td> <td>50.00</td> <td></td> </tr> <tr> <td>D</td> <td></td> <td>wheat, winter</td> <td>bushels</td> <td></td> <td>31.00</td> <td></td> </tr> <tr> <td>N</td> <td></td> <td>corn</td> <td>bushels</td> <td></td> <td>55.00</td> <td></td> </tr> <tr> <td>N</td> <td></td> <td>grain sorghum</td> <td>bushels</td> <td></td> <td>63.00</td> <td></td> </tr> <tr> <td>N</td> <td></td> <td>soybeans</td> <td>bushels</td> <td></td> <td>22.00</td> <td></td> </tr> </tbody> </table>												Seq	Crop Name	Units	Nirr Yield							Low	RV	High	D		corn	bushels		50.00		D		grain sorghum	bushels		50.00		D		wheat, winter	bushels		31.00		N		corn	bushels		55.00		N		grain sorghum	bushels		63.00		N		soybeans	bushels		22.00	
	Seq	Crop Name	Units	Nirr Yield																																																														
				Low	RV	High																																																												
D		corn	bushels		50.00																																																													
D		grain sorghum	bushels		50.00																																																													
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N		grain sorghum	bushels		63.00																																																													
N		soybeans	bushels		22.00																																																													

This same process can be used and the “Paste Rows/Trees (Inserting New Rows)” can be used if the decision is to append existing data.

Lesson Summary

In this chapter, basic editing tasks of Cut, Copy, and Paste involving specific “Row(s)” of data or specific “Tree(s)” of data (parent and child tables) were performed that can be applied throughout NASIS. The use of delete and removal of delete functions were discussed. The analysis functions of sorting, filtering and grouping were discussed to identify the advantages of each tool. And the use of the Find/Replace and the Global Paste functions were explained. These editing functions can be used to manage data in any of the objects and tables in NASIS.

Chapter 7: Examining Area, Legend, Mapunit, and Data Mapunit Objects

NASIS separates the soil survey area into two parts: the **Area**, and the **Legend**. The area includes the soil survey area name and total acres. The legend includes the legend name (i.e. detailed soil map legend), geographical applicability, and the survey map units and their publication map unit symbol. Legends are linked to survey areas, allowing several legends to be recorded for each soil survey area.

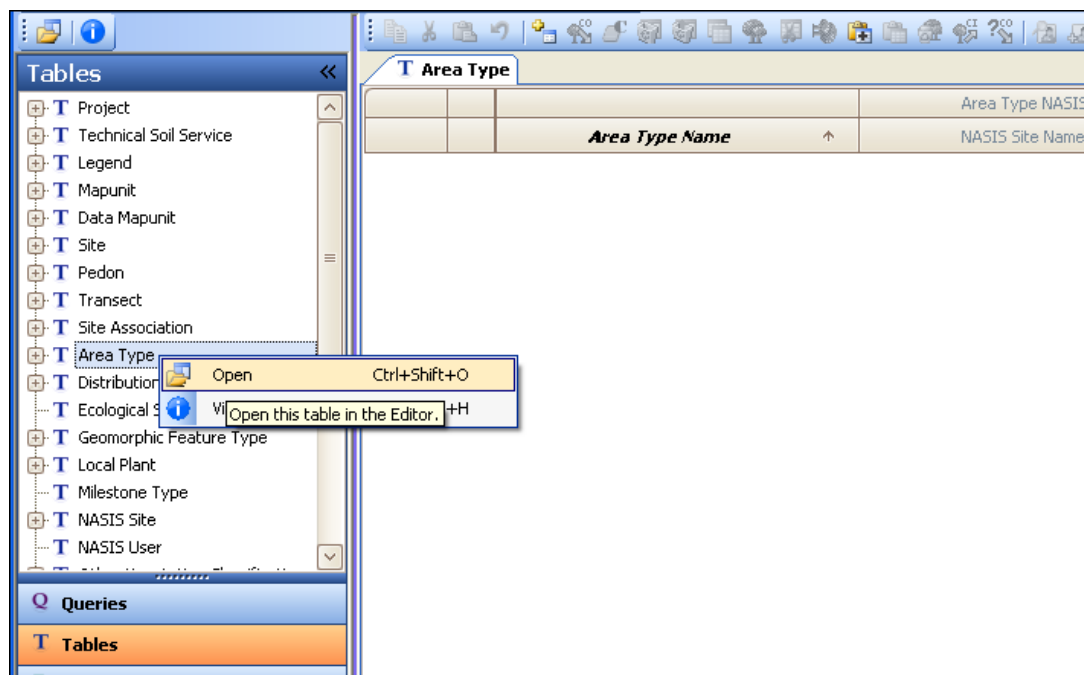
NASIS also separates the map unit into two parts: the **Mapunit** and the **Data mapunit**. The mapunit includes the national map unit symbol, map unit name, and correlation history. The data mapunit includes the map unit composition, physical and chemical properties, and interpretations.

For a graphical view of these concepts, refer to Figure 1-4 “NASIS Table Organization”.

Examining the Area Tables

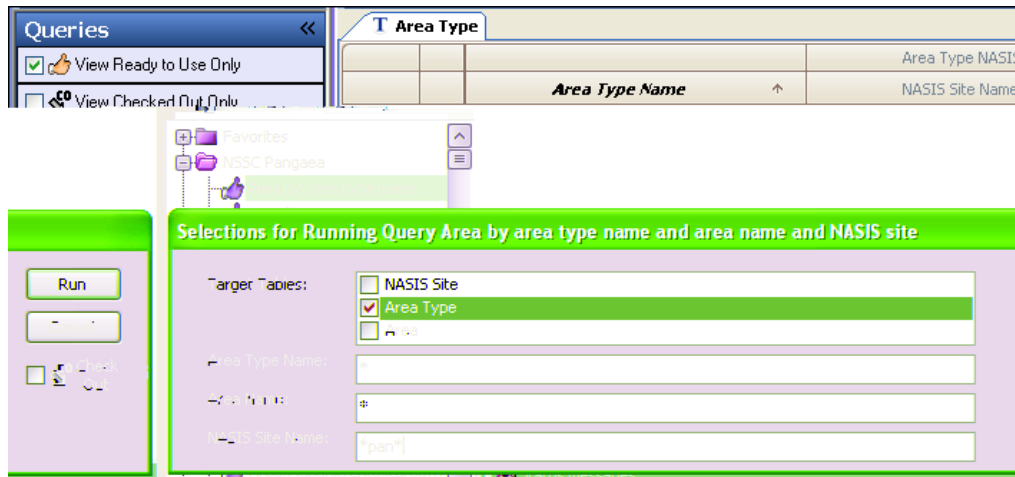
NASIS stores more than just traditional soil survey areas. Because there are several kinds of areas, they are organized by area type. Chapter 3 discusses the practice of moving within and across object boundaries. In this lesson, the Area and Legend objects will be visited again, however, this lesson focuses more on the content of the tables and how they will be used to manage the map unit attributes.

1. Open the Tables Explorer, scroll down and open the Area Type table.



NASIS User Guide

- Open the Queries Explorer, open the NSSC Pangaea queries, then choose the first query “Area by area type name and area name and NASIS site”:



Set Target table to “Area Type”, enter an asterisk for the Area Type Name and the Area Name, then enter “*pan*” for the NSSC Pangaea NASIS site. Accept the 20 records.

- Hide the Explorer panel by clicking on the double arrows in its upper right hand corner. Right click on the “Area Type Name” column and choose the “Best Fit (all columns)”.

Area Type Name	NASIS Site Name	NASIS Group Name	Object Last Updated	NASIS User Name	Record Last Updated	Record Length
Bureau of Land Management Administered Land	NSSC Pangaea	Standard Area Types	02/10/1998 13:45:50	Kelsoe, Russell J.	10/05/2009 14:19:17	
Climate Factor Area	NSSC Pangaea	Standard Area Types	05/16/1997 16:01:01	Kelsoe, Russell J.	10/05/2009 14:19:17	
Country	NSSC Pangaea	Standard Area Types	02/09/2009 19:13:22	Fortner, Jim	10/05/2009 14:19:17	
County or Parish	NSSC Pangaea	Standard Area Types	03/18/2009 07:24:50	Fortner, Jim	10/05/2009 14:19:17	
Land Resource Region	NSSC Pangaea	Standard Area Types	05/16/1997 16:01:01	Kelsoe, Russell J.	10/05/2009 14:19:17	
Legacy MLRA Soil Survey Area	NSSC Pangaea	Standard Area Types	09/04/2008 12:34:23	Fortner, Jim	10/05/2009 14:19:17	
Military Reservation	NSSC Pangaea	Standard Area Types	07/25/2006 15:21:39	Finnell, Paul R.	10/05/2009 14:19:17	
MLRA	NSSC Pangaea	Standard Area Types	02/12/2007 12:22:27	Fortner, Jim	10/05/2009 14:19:17	
MLRA Soil Survey Area	NSSC Pangaea	Standard Area Types	06/03/2009 10:11:15	Fortner, Jim	10/05/2009 14:19:17	
MLRA Soil Survey Regional Office Area	NSSC Pangaea	Standard Area Types	09/04/2008 12:36:04	Fortner, Jim	10/05/2009 14:19:17	
National Forest System Land	NSSC Pangaea	Standard Area Types	04/12/2004 10:20:29	Fortner, Jim	10/05/2009 14:19:17	
National Park System Land	NSSC Pangaea	Standard Area Types	04/03/2009 08:25:59	Fortner, Jim	10/05/2009 14:19:17	
Non-MLRA Soil Survey Area	NSSC Pangaea	Standard Area Types	08/26/2009 12:40:24	Fortner, Jim	10/05/2009 14:19:17	
Physiographic Division	NSSC Pangaea	Standard Area Types	05/08/2002 07:14:25	Fortner, Jim	10/05/2009 14:19:17	
Physiographic Province	NSSC Pangaea	Standard Area Types	02/05/1998 10:32:30	Kelsoe, Russell J.	10/05/2009 14:19:17	
Physiographic Section	NSSC Pangaea	Standard Area Types	02/05/1998 10:32:40	Kelsoe, Russell J.	10/05/2009 14:19:17	
Rainfall Factor Area	NSSC Pangaea	Standard Area Types	04/12/2005 13:10:21	Fortner, Jim	10/05/2009 14:19:17	
State or Territory	NSSC Pangaea	Standard Area Types	03/18/2009 07:21:20	Fortner, Jim	10/05/2009 14:19:17	
USGS 25 Minute Quadrangles	NSSC Pangaea	Standard Area Types	05/23/1998 15:35:47	Kelsoe, Russell J.	10/05/2009 14:19:17	
USGS 7.5 Minute Quadrangles	NSSC Pangaea	Standard Area Types	10/28/2008 05:43:28	Fortner, Jim	10/05/2009 14:19:17	

These are the 20 national Area Types used to organize the areas used in soil survey. A sample of area types stored in NASIS appears. NASIS also stores National Park System Land, National Forest System Land, Military Reservations, Land Resource Regions, and many more. Notice that in NASIS, the climate and rainfall factor areas, and political and physiographic areas can be recorded, in addition to soil survey areas. Legends are stored only for MLRA and Non-MLRA soil survey area types. This was also discussed in Chapter 3.

NASIS User Guide

- Use the horizontal slider to scroll to the right to see all the columns. Notice, too, that the Area Type objects are all protected. These area types (Area Type Name column) are owned by the Standard Area Types (NASIS Group Name column) in the NASIS Pangaea database (NASIS Site Name column) at the National Soil Survey Center in Lincoln, Nebraska.

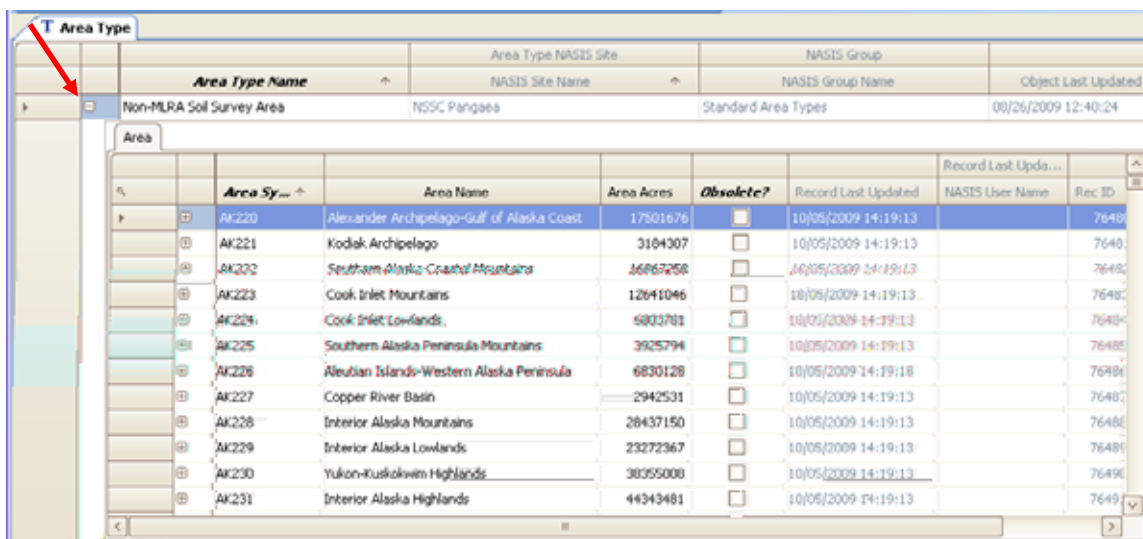
note: The name Pangaea, also Pangea (pronounced pan-je'-ah) is the name used by geographers for the supercontinent from which current day continents were derived.

- Additional help on a particular data element or table name can be found by using the View Information or in the "Tables and Columns Description" report on the NASIS metadata web page.

<http://soils.usda.gov/technical/nasis/documents/index.html>

- After examining the various columns in the Area Type table, click the **Non-MLRA Soil Survey Area** row, then click the plus button on the left side.

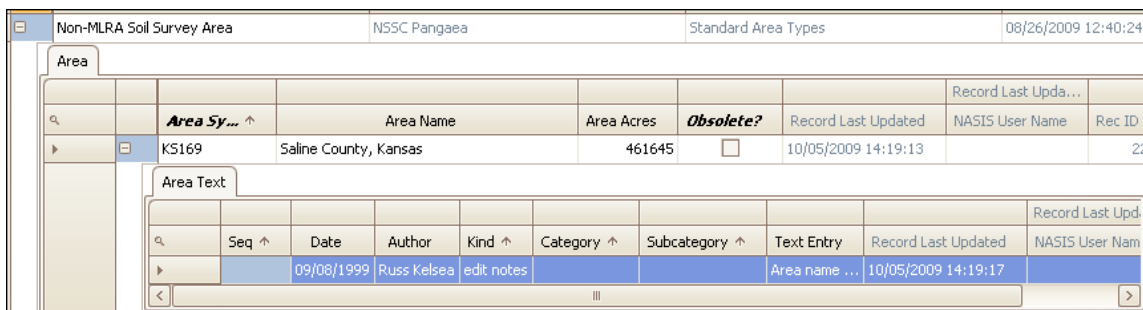
note: The displayed Area table lists all the soil survey areas categorized as Non-MLRA Soil Survey Area Type. The Area table contains the soil survey area name, symbol and acres. All soil survey areas converted into NASIS are stored as Non-MLRA Soil Survey Areas.



Area Type		Area Type NASIS Site	NASIS Group	Object Last Updated
Area Type Name	NASIS Site Name	NASIS Group Name		
Non-MLRA Soil Survey Area	NSSC Pangaea	Standard Area Types		08/26/2009 12:40:24

Area	Area Sy...	Area Name	Area Acres	Obsolete?	Record Last Updated	NASIS User Name	Rec ID
	AK220	Alexander Archipelago-Gulf of Alaska Coast	17501676	<input type="checkbox"/>	10/05/2009 14:19:13		7648
	AK221	Kodiak Archipelago	3184307	<input type="checkbox"/>	10/05/2009 14:19:13		7648
	AK222	Southern Alaska Coastal Mountains	16867258	<input type="checkbox"/>	10/05/2009 14:19:13		7648
	AK223	Cook Inlet Mountains	12841046	<input type="checkbox"/>	10/05/2009 14:19:13		7648
	AK224	Cook Inlet Lowlands	5803781	<input type="checkbox"/>	10/05/2009 14:19:13		7648
	AK225	Southern Alaska Peninsula Mountains	3925794	<input type="checkbox"/>	10/05/2009 14:19:13		7648
	AK226	Aleutian Islands-Western Alaska Peninsula	6830128	<input type="checkbox"/>	10/05/2009 14:19:13		7648
	AK227	Copper River Basin	2942531	<input type="checkbox"/>	10/05/2009 14:19:13		7648
	AK228	Interior Alaska Mountains	28437150	<input type="checkbox"/>	10/05/2009 14:19:13		7648
	AK229	Interior Alaska Lowlands	23272367	<input type="checkbox"/>	10/05/2009 14:19:13		7648
	AK230	Yukon-Kuskokwim Highlands	38355008	<input type="checkbox"/>	10/05/2009 14:19:13		7649
	AK231	Interior Alaska Highlands	44343481	<input type="checkbox"/>	10/05/2009 14:19:13		7649

- Use the slider bar to view columns further to the right. Then find a survey area of interest and click on the plus button on the left side to open the Area Text table.



Area		Area Name	Area Acres	Obsolete?	Record Last Updated	NASIS User Name	Rec ID
	KS169	Saline County, Kansas	461645	<input type="checkbox"/>	10/05/2009 14:19:13		222

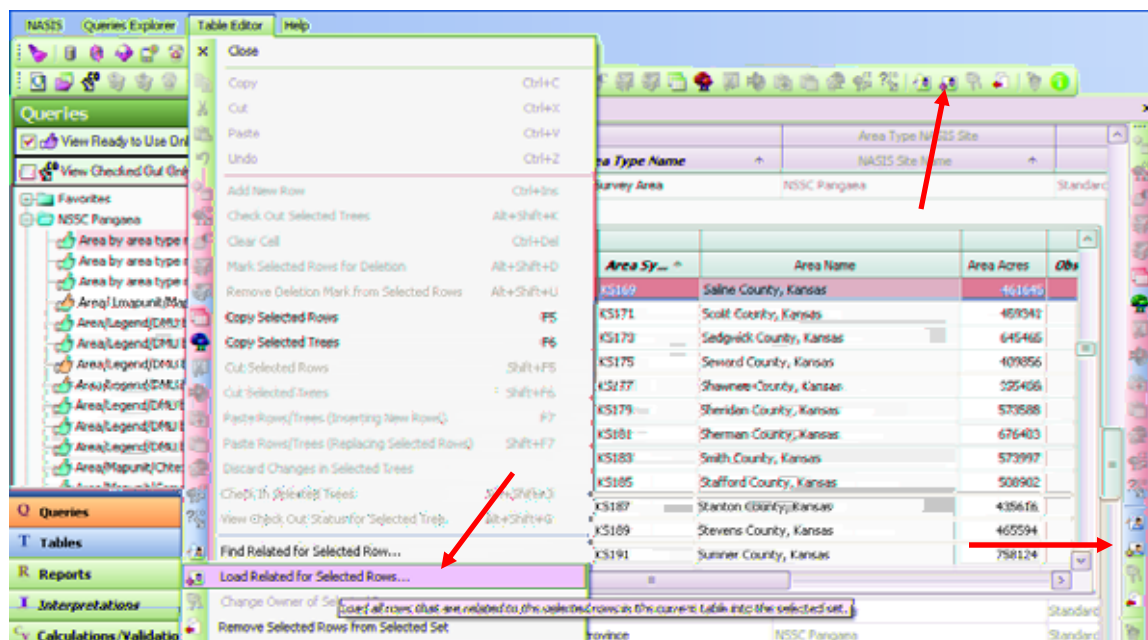
Area Text		Text Entry	Record Last Updated	NASIS User Name
		Area name ...	10/05/2009 14:19:17	

Examining the Legend Tables

The Legend object and its tables are next in this review. Presently, no legends are in the selected set, only the Area Types and Areas that were loaded.

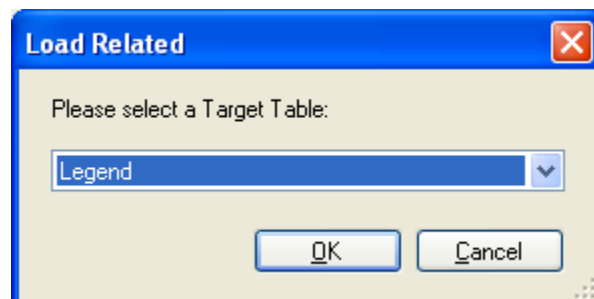
Because the Area Type object and the Legend object are independent, navigating to the legend for a particular survey area requires a leap across object boundaries as previously discussed in Chapter 3. To load the legend, either run a query with a different target table (Legend), or use the Load Related command.

1. Identify and highlight Non-MLRA Soil Survey Area of interest in the Area table.
2. Choose **"Load Related for Selected Rows"** from the Table Editor menu, or the Editor toolbar or the Table toolbar.

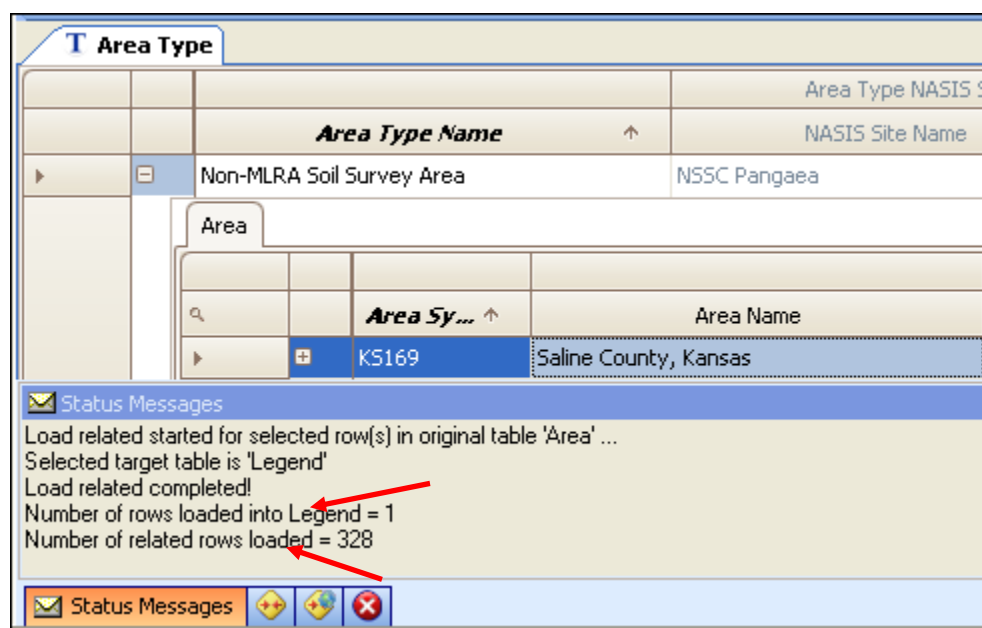


NASIS User Guide

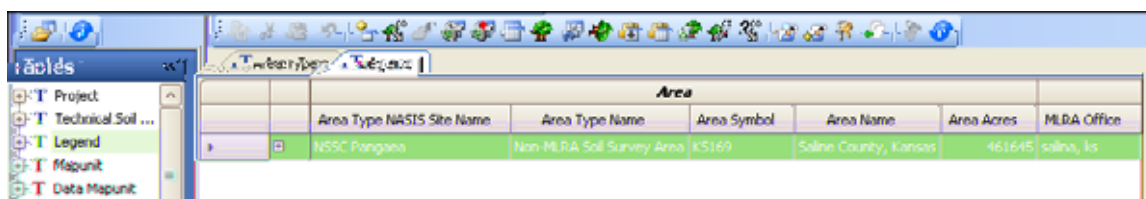
3. A parameter box will appear and choose the Legend as the Target Table; click **OK**.



4. The status messages panel will display the number of records loaded.



5. Open the Explorer Panel and double click on the Legend table, opening the table into the Editor Panel. Examine each column in the Legend table (resized and shown below), scrolling to the right to view all columns.



6. The Legend table begins with an Area lineage band used to identify the Area columns for the specific legend. The remaining columns are used to store the MLRA Office, legend description, survey status and correlation date (no longer editable), MOU information, project scale, and geographic applicability. Other soil survey schedule data has been moved to the Project Object.

NASIS User Guide

- The LegendMapunit table is a child table of the Legend Object. Open the child tables by clicking on the plus on the left hand side of the table. The child tables open to the LegendMapunit table.

T Area Type		T Legend																	
UI Projected Completion		Project Scale		Correlation Date		Geographic Applicability		Legend NASIS Site		NASIS Group		Object Last Upda...							
24000		06/1989		current wherever mapped		MLRA05_Office		Kansas State Office		11/13/2008 12:37:12		Wehmueeller, Bill							
Legend Mapunit		Legend Area Overlap		Legend Certification History		Legend Export Certification History		Legend Text											
Mapunit Symbol		Total Acres		National Mapunit Symbol		Mapunit Name		Mapunit Status		Record Last Updated									
113LO	12	12t		LONGFORD SILTY CLAY LOAM, 2 TO 6 PERCENT SLOPES, ERODED	additional														
113SM	194	12t		SMOLAN SILTY CLAY LOAM, 1 TO 3 PERCENT SLOPES	additional														
115LM	12	12t		LADYSMITH SILTY CLAY LOAM, 0 TO 2 PERCENT SLOPES	additional														
143MD	11	12t		MCCOOK SOILS, OCCASIONALLY FLOODED	additional														
2177	3604	12t		McCook silt loam, occasionally flooded	correlated														
2179	12	12t		McCook soils, occasionally flooded	correlated														
2266	37086	12t		Tobin silt loam, occasionally flooded	correlated														
2310	241	12t		Bridgeport silt loam, rarely flooded	correlated														
2347	13810	12t		McCook silt loam, rarely flooded	correlated														
2396	4654	12t		New Canaan silt loam, rarely flooded	correlated														
2375	12991	12t		Rushway silt loam, rarely flooded	correlated														
3250	4045	12t		Bayaria Debris complex, rarely flooded	correlated														

The Legend Mapunit table links the mapunits to the legend. The two fields entered in this table are the *Mapunit Symbol* and the Total Acres. The Mapunit Symbol is the field symbol assigned by the Soil Survey Leader and/or the publication symbol assigned by the State Soil Scientist. The correlation process of changing the field symbol to the publication symbol will be discussed in a later chapter. The remaining columns in this table are actually in the Mapunit table and are provided in the Legend Mapunit table for viewing.

- The Legend Area Overlap child table is used to identify the spatial areas that overlap the survey area. Notice the use of Area Types and Area Names explained earlier in this chapter.

T Area Type		T Legend																	
UI Projected Completion		Project Scale		Correlation Date		Geographic Applicability		Legend NASIS Site		NASIS Group		Object Last Upda...							
24000		06/1989		current wherever mapped		MLRA05_Office		Kansas State Office		11/13/2008 12:37:12		Wehmueeller, Bill							
Legend Mapunit		Legend Area Overlap		Legend Certification History		Legend Export Certification History		Legend Text											
Overlap Area Type		NASIS Site Name (Overlap Area)		Overlap Area Type Name		Overlap Area Symbol		Overlap Area Name		Overlap Acres		Record Last							
01	NSSC/Pangaea	County or Parish		KS169		Saline		Central Kansas Sandstone Hills		461645									
02	NSSC/Pangaea	MLRA		74		Central Kansas Sandstone Hills		461645											
03	NSSC/Pangaea	State or Territory		KS		Kansas													
04	NSSC/Pangaea	Climate Factor Area		30		Climate Factor													
05	NSSC/Pangaea	Rainfall Factor Area		175		Rainfall Factor													

- Clicking on the plus opens the Legend Mapunit Area Overlap table that is used to populate those mapunits found within those specific spatial areas. In this example the Legend Mapunit Area Overlap table is opened for Central Kansas Sandstone Hills MLRA which is a spatial overlap area within the Saline County, Kansas Legend. Those mapunits that are mapped within MLRA 74 inside Saline County, Kansas appear in the Legend Mapunit Area Overlap table.

NASIS User Guide

Area Type		Legend								
Area										
Area Type	NASIS Site Name	Area Type Name	Area Symbol	Area Name	Area Acres	MLRA Office	Legend Description	Survey Status	MOU Signed	
NSSC	Pangaea	Non-MLRA Soil Survey Area	KS169	Saline County, Kansas	461645	salina, ks	Detailed Soil Map Legend	published	05/15/1982	
Legend Mapunit		Legend Area Overlap		Legend Certification History		Legend Export Certification History				Legend Text
Area										
Overlap Area Type	NASIS Site Name (Overlap Area)	Overlap Area Type Name	Overlap Area Symbol	Overlap Area Name	Overlap Acres	Record				
NSSC	Pangaea	County or Parish	KS169	Saline	461645					
NSSC	Pangaea	MLRA	74	Central Kansas Sandstone Hills	461645					
Legend Mapunit Area Overlap										
Legend Mapunit										
National Mapunit Symbol	Mapunit Name	Mapunit Status	Mapunit Symbol	Overlap Acres	Record					
tsrh6	Beavaria-Detroit complex, rarely flooded	correlated	3250	4045						
tsrh7	Bridgeport silt loam, rarely flooded	correlated	2310	241						
tsrh8	Cass fine sandy loam, occasionally flooded	correlated	3521	2176						
tsrh9	Clare silty clay loam, 3 to 7 percent slopes	correlated	4955	2441						
tsrha	Clare silty clay, 3 to 7 percent slopes	correlated	4570	48						

10. The Legend Certification History child table is populated with those individuals from the Soil Survey Office and the MLRA Regional Office who have certified the Quality Control and the Quality Assurance for the work completed in this survey area.

T Area Type		T Legend								
		MOU Signed	MOU Agency Responsible	MOU Projected Completion	Project Scale	Correlation Date	Geographic Applicability	Legend NASIS Site	NASIS Group	
/M		01/15/1984	nscc		24000	02/1976	current wherever mapped	MLRAS_Office	Kansas State Office	10/06
Legend Mapunit Legend Area Overlap Legend Certification History Legend Export Certification History Legend Text										
	Reviewer							Record Last Upda...		
%	NASIS User Name	Certification Date	Certification Kind	Legend Certification Status	Certification Text	Record Last Updated	NASIS User Name	Rec ID		
M	Wehmuehler, Bill	10/15/2009	quality assurance	certified		10/06/2009 16:00:26	Finnell, Paul R.	101		
+N	Anderson, Joe	10/06/2009	quality control	partly certified		10/06/2009 16:00:21	Finnell, Paul R.	101		
<										

11. The Legend Export Certification History table is populated each time the Legend is exported to the Staging Server. This table is used to document the person exporting the data, its certification status and pertinent text information about the export.

Area Type		Legend								
		MOU Signed	MOU Agency Responsible	MOU Projected Completion	Project Scale	Correlation Date	Geographic Applicability	Legend NASIS Site	NASIS Group	Object
F M		01/15/1984	nscc		24000	02/1976	current wherever mapped	MLRAS_Office	Kansas State Office	10/06
Legend Mapunit										
Legend Area Overlap										
Legend Certification History										
Legend Export Certification History										
Legend Text										
		Reviewer	NASIS User Name		Export Certification Date	Export Certification Status	Export Metadata	Record Last Updated	NASIS User Name	Rec ID
M			Warner, John		02/12/2002	Fully certified	This export was d...	10/06/2009 16:14:12	Finnell, Paul R.	187

12. The Legend Text child table is used to store any text notes pertinent to the Legend.

Examining the Mapunit Table

Beginning with the release of NASIS6, the mapunit now becomes an independent object. Chapter 3 provided the background information on database objects. The update of soil surveys prompted the need for mapunits to be linked to a legend versus being a dependent child table. Mapunits can now be linked to one or more *Legends* through the *Legend Mapunit* table and Mapunits can still be linked to one or more *Data Mapunits* through the *Correlation table*. This independence allows a mapunit to be linked to various legends, using the same National Mapunit Symbol, and to be linked to the same set of components, properties and interpretations.

In preparation for this section, go to the Explorer Panel and open the Legend Mapunit table. Opening a child table independent of the parent table is a new feature in NASIS6. More columns appear when the child table is opened independent of the parent table. Notice the “Lineage Band” that appears as the first few columns of the Legend Mapunit table. These columns are added when viewing the table to provide information on the linkage of the Areas, Legends and the Mapunits.

[illegible]

NASIS User Guide

Scrolling to the right in this table provides additional columns identifying the mapunit symbol and total acres in addition to viewing the columns found in the Mapunit table:

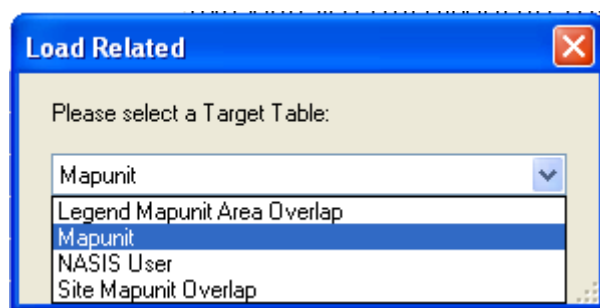
T	Area Type	T	Legend	T	Legend Mapunit	Mapunit			
	Mapunit Symbol	Total Acres	National Mapunit Symbol	Mapunit Name	Mapunit Status	Record Last Update			
	041LA	4	12m	LANCASTER-HEDVILLE LOAMS, 3 TO 15 PERCENT SLOPES	additional				
	041MA	3607	12ly	MCCOOK SILT LOAM, OCCASIONALLY FLOODED	additional				
		60	12lx	MUIR, DETROIT, RARELY FLOODED	additional				
	1136R	241	12lp	BRIDGEPORT SILT LOAM, RARELY FLOODED	additional				
	1130M	48	12su	CLINE SILTY CLAY, 3 TO 6 PERCENT SLOPES	additional				
	1130L	105	12su	CLINE SILTY CLAY, 3 TO 6 PERCENT SLOPES	additional				
	143M	126	12lx	LONGFORD SILTY CLAY LOAM, 2 TO 4 PERCENT SLOPES	additional				
	1430L	12	12lx	LONGFORD SILTY CLAY LOAM, 2 TO 4 PERCENT SLOPES	additional				
	194	30	12lx	EDSALGO SILTY CLAY LOAM, 3 TO 7 PERCENT SLOPES	additional				
	12	12m		LADYSMITH SILTY CLAY LOAM, 6 TO 2 PERCENT SLOPES	additional				
	11	12lx		MCCOOK SOILS, OCCASIONALLY FLOODED	additional				
	3604	tmhx		McCook silt loam, occasionally flooded	correlated				
	12	tmhx		McCook soils, occasionally flooded	correlated				
	37886	tmia		Tobin silt loam, occasionally flooded	correlated				
	241	tmh7		Bridgeport silt loam, rarely flooded	correlated				
	13010	tmhy		McCook silt loam, rarely flooded	correlated				
	6684	tmh2		New Cambria silty clay, rarely flooded	correlated				
	12491	tmh5		Roxbury silt loam, rarely flooded	correlated				
	4045	tmh6		Bavaria-Detroit complex, rarely flooded	correlated				
	11315	tmh3		Edsalgo clay loam, 3 to 7 percent slopes	correlated				

1. After viewing the **Legend Mapunit** table, highlight all the records that appear in the table (use Ctrl + a for all rows).
2. Choose "**Load Related for Selected Rows**" from the Table Editor menu, or the Editor toolbar or the Table toolbar.

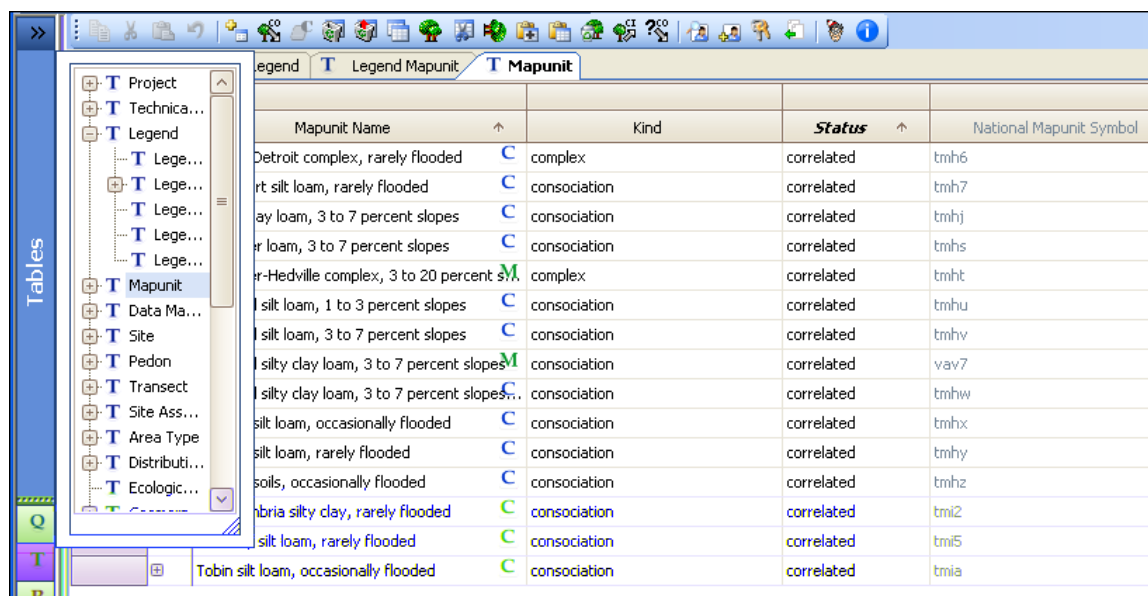
Mapunit					
Mapunit Symbol	Total Acres	National Mapunit Symbol	Mapunit Name	Mapunit Status	Record Last Update
113LN	126	12ls	LONGFORD SILTY CLAY LOAM, 3 TO 6 PERCENT SLOPES	additional	
113LO	12	12lt	LONGFORD SILTY CLAY LOAM, 2 TO 6 PERCENT SLOPES, ERODED	additional	
1135M	194	12sq	SMOLAN SILTY CLAY LOAM, 1 TO 3 PERCENT SLOPES	additional	
115LM	12	12lr	LADYSMITH SILTY CLAY LOAM, 0 TO 2 PERCENT SLOPES	additional	
143MD	11	12lv	MCCOOK SOILS, OCCASIONALLY FLOODED	additional	
2177	3604	tmhx	McCook silt loam, occasionally flooded	correlated	
2179	12	tmhz	McCook soils, occasionally flooded	correlated	
2266	37886	tmia	Tobin silt loam, occasionally flooded	correlated	
2310	241	tmh7	Bridgeport silt loam, rarely flooded	correlated	
2347	13810	tmhy	McCook silt loam, rarely flooded	correlated	
2366	6684	tm2	New Cambria silty clay, rarely flooded	correlated	
2375	12491	tm5	Roxbury silt loam, rarely flooded	correlated	
3250	4045	tmh6	Bavaria Detroit complex, rarely flooded	correlated	
3350	11315	tmhj	Edalgo clay loam, 3 to 7 percent slopes	correlated	
3391	8263	tmhs	Lancaster loam, 3 to 7 percent slopes	correlated	
3396	92370	tmht	Lancaster-Hindville complex, 3 to 20 percent slopes	correlated	
3401	10584	tmhu	Longford silt loam, 1 to 3 percent slopes	correlated	
3402	26929	tmhv	Longford silt loam, 3 to 7 percent slopes	correlated	
3403	125	vaw7	Longford silty clay loam, 3 to 7 percent slopes	correlated	
3404	12	tmhw	Longford silty clay loam, 3 to 7 percent slopes, eroded	correlated	

NASIS User Guide

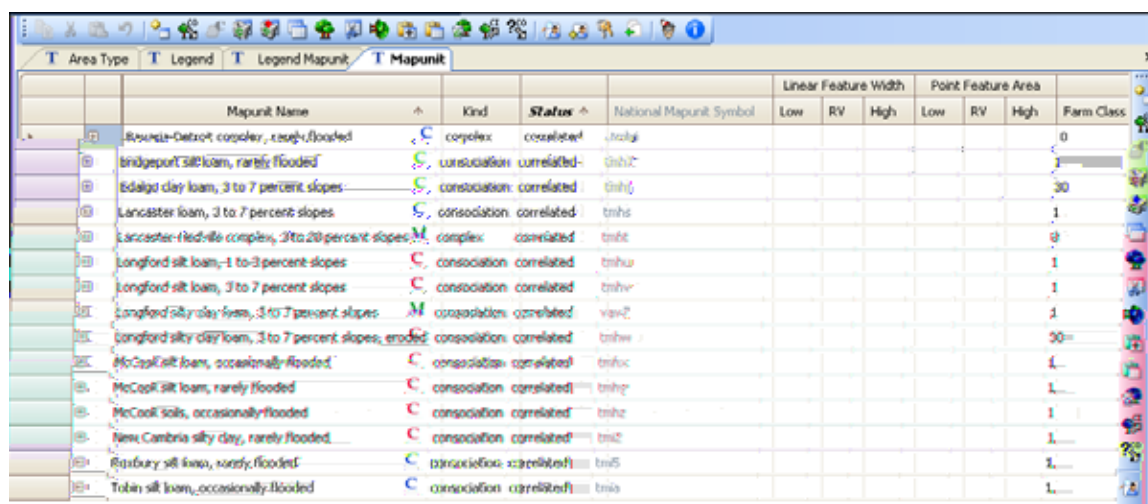
- The parameter box will appear and choose Mapunit from the choice list.



- On the Explorer panel, open the Mapunit Table.

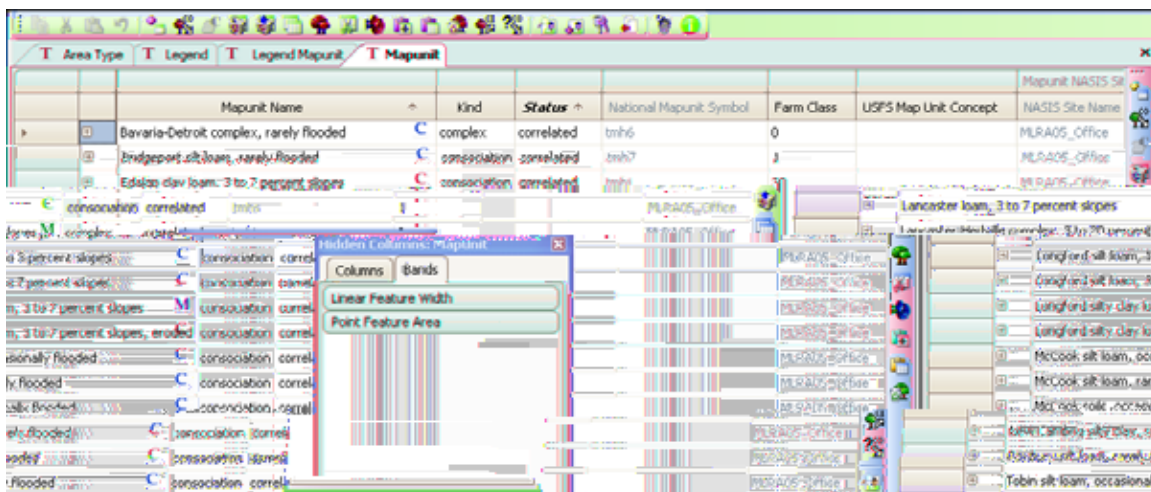


- Adjust the table columns by choosing the "Best Fit (all columns)" from the Right Click menu.



NASIS User Guide

6. It is in the Mapunit table that the mapunits are created and managed. Note the graphic of “C” and “M” in the Mapunit Name column in the previous image. This graphic is the status of the specific column – previous NASIS versions include a “Status” column to identify the “Calculated”, “Prior” converted, and “Manual” entries. The graphic replaces the status column and will be seen in other tables.
7. The map unit “status” is assigned to the specific map unit. That “status” then appears in all legends in which the map unit is linked. Specific correlation procedures, discussed in later chapters, must be followed when modifying the status of a map unit.
8. The “National Mapunit Symbol” is a new addition to NASIS6. The “RecID” or Record ID is an internal computer number for that specific row of data in the Mapunit table and that number is found by scrolling to the far right of the table. That number is converted to Base31 and used as the unique National Mapunit Symbol for that specific map unit record. This field can not be edited.
9. The Linear Feature Width and the Point Feature Area are columns used to identify non-polygonal mapunits that can be used in surveys. These bands can be hidden if these features are not used in the survey area.



10. The “Farm Class” column identifies the Farmland classification of the specific map unit and that classification stays with that specific map unit regardless of the legend to which it is linked.
11. The first of several “USFS” columns appear in various database tables. These tables are included for the purpose of future integration of the soils data from USFS TERRA into NASIS.

NASIS User Guide

12. Scrolling to the right will present the remaining columns in the Mapunit table. The remaining columns identify the ownership of the Mapunit Object (NASIS Site Name, NASIS Group Name, Object Last Updated). Additional columns are used to identify the person who last updated the Object and the person who last updated the specific row of data in the Mapunit table. And the final column is the RecID that was previously discussed in this section.

T Area Type T Legend T Legend Mapunit T Mapunit										
	Symbol	Farm Class	Mapunit NASIS Site	NASIS Group	Object Last Updated	NASIS User Name	Record Last Updated	NASIS User Name	Record Last Updated	Rec ID
1382154		0	MLRA05_Office	5-8 Salina, Kansas	11/13/2008 12:37:12	Wehmueller, Bill				
1382155		1	MLRA05_Office	5-8 Salina, Kansas	11/13/2008 12:37:12	Wehmueller, Bill				
1382167		30	MLRA05_Office	5-8 Salina, Kansas	11/13/2008 12:37:12	Wehmueller, Bill				
1382176		1	MLRA05_Office	5-8 Salina, Kansas	11/13/2008 12:37:12	Wehmueller, Bill				
1382177		0	MLRA05_Office	5-8 Salina, Kansas	11/13/2008 12:37:12	Wehmueller, Bill				
1382178		1	MLRA05_Office	5-8 Salina, Kansas	11/13/2008 12:37:12	Wehmueller, Bill				
1382179		1	MLRA05_Office	5-8 Salina, Kansas	11/13/2008 12:37:12	Wehmueller, Bill				
1460419		1	MLRA05_Office	5-8 Salina, Kansas	11/13/2008 12:37:12	Wehmueller, Bill				
1382180		30	MLRA05_Office	5-8 Salina, Kansas	11/13/2008 12:37:12	Wehmueller, Bill				
1382181		1	MLRA05_Office	5-8 Salina, Kansas	11/13/2008 12:37:12	Wehmueller, Bill				
1382182		1	MLRA05_Office	5-8 Salina, Kansas	11/13/2008 12:37:12	Wehmueller, Bill				
1382183		1	MLRA05_Office	5-8 Salina, Kansas	11/13/2008 12:37:12	Wehmueller, Bill				
1382186		1	MLRA05_Office	5-8 Salina, Kansas	11/13/2008 12:37:12	Wehmueller, Bill				
1382189		1	MLRA05_Office	5-8 Salina, Kansas	11/13/2008 12:37:12	Wehmueller, Bill				
1382194		1	MLRA05_Office	5-8 Salina, Kansas	11/13/2008 12:37:12	Wehmueller, Bill				

13. Click on the plus (+) on the left side of the table to open the child tables. The Correlation, Mapunit History, Mapunit Text, and two Mapunit USFS tables are child tables:

T Area Type T Legend T Legend Mapunit T Mapunit										
	Symbol	Farm Class	Mapunit NASIS Site	NASIS Group	Object Last Updated	NASIS User Name	Record Last Updated	NASIS User Name	Record Last Updated	Rec ID
+		0	MLRA05_Office	5-8 Salina, Kansas	11/13/2008 12:37:12	Wehmueller, Bill				1382154
Correlation Mapunit History Mapunit Text Mapunit USFS Ecological Classification Mapunit USFS Interpretation										
Data Mapunit										
	DMU Description	Data Mapunit Rec ID	Rep DMU	Constituent Acres	Record Last Updated	NASIS User Name	Record ID			
	1698A	66128		3750			1547462			

14. The Correlation table is used to link the Mapunit to its Data Mapunit (DMU Description, Data Mapunit Rec ID). This table is also used to identify correlation records in combining or splitting mapunits. The Rep DMU column is used to identify that one specific Data Mapunit record that provides the soil properties and interpretations for the specific mapunit. Additional information on correlation of mapunits is found in later chapters.

Correlation Mapunit History Mapunit Text Mapunit USFS Ecological Classification Mapunit USFS Interpretation								
	Date	Author	Correlation Kind	Correlation Event	Historical Name	Status	Text Entry	Record Last Upd
	10/18/2004	JCR	name change	correlation amendment			The Kansas...	
	10/18/2004	JCR	name change	correlation amendment			The Kansas...	
	02/01/2004	Paul R. Finnell	symbol change	correlation amendment	Bavaria-Detroit complex, rarely flooded	correlated	In conjunct...	
	10/02/1997				BAVARIA-DETROIT COMPLEX		This map u...	

15. The Mapunit History table is populated at any correlation event.

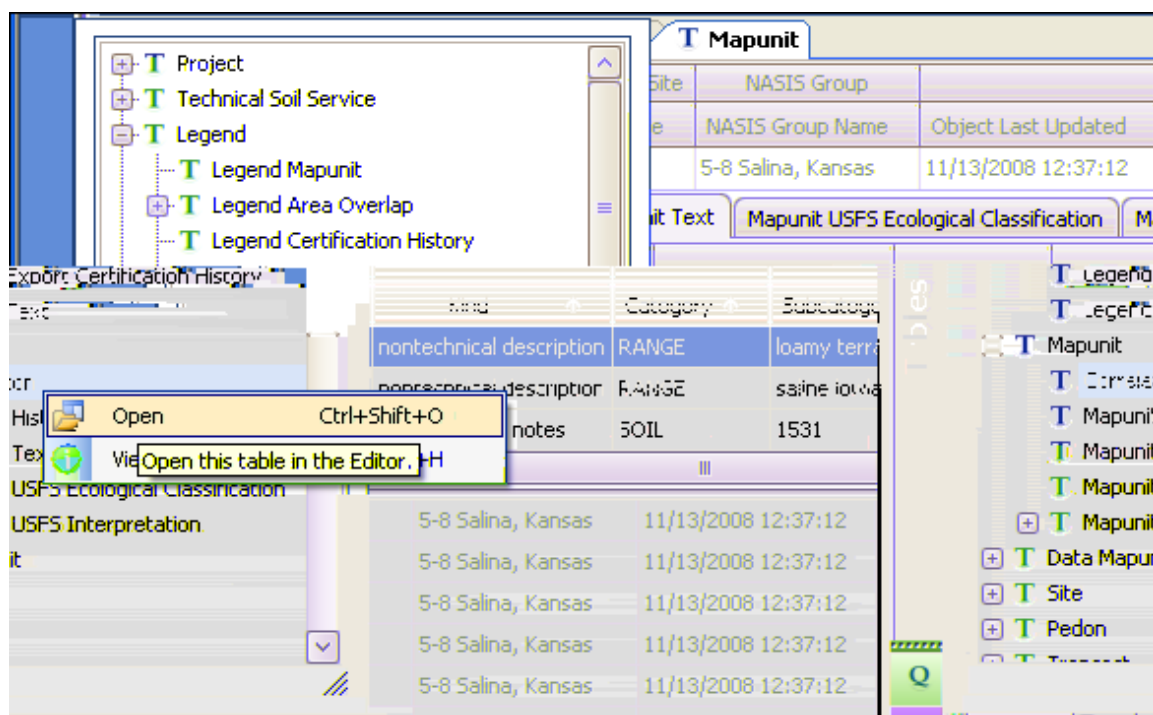
NASIS User Guide

Correlation	Mapunit History	Mapunit Text	Mapunit USFS Ecological Classification	Mapunit USFS Interpretation					
Q	Date	Author	Kind	Category	Subcategory	Text Entry	Record Last Updated	NASIS User Name	Rec
	05/08/2006	state range con.	nontechnical description	RANGE	loamy terrace (74)	Deep terra...			27
	05/08/2006	state range con.	nontechnical description	RANGE	saline lowland (74)	Deep saline...			27
			miscellaneous notes	SOIL	1531	Deep, near...			21

16. The Mapunit Text table is used to capture any notes pertinent to the map unit.

17. The Mapunit USFS ... tables will be a future concern to soil scientists.

In preparation for the review of the DataMapunit Object, on the Explorer panel, open the Mapunit “tree” by clicking on the plus (+) sign next to “Mapunit” and open the “Correlation” table:

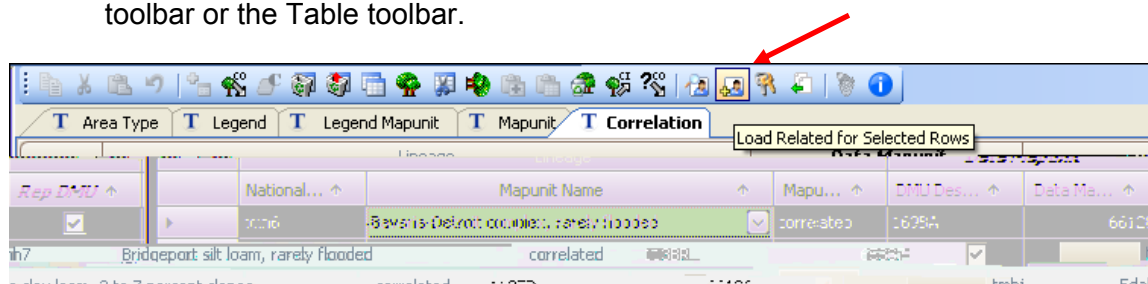


18. Lineage columns are also available in the Correlation table when opened independent of the Mapunit table.

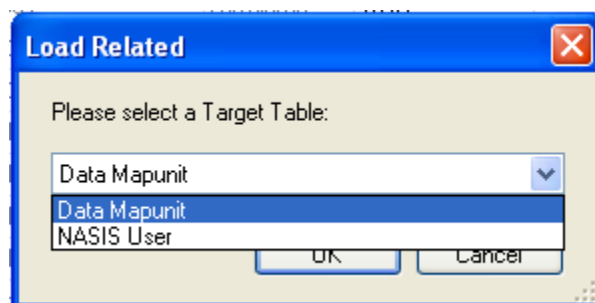
Area Type	Legend	Legend Mapunit	Mapunit	Correlation					
Lineage				Data Mapunit					
National...	Mapunit Name	Mapu...	DMU Des...	Data Ma...	Rep DMU	Constituen...			
tmh6	Bavaria-Detroit complex, rarely flooded	correlated	169BA	66128	<input checked="" type="checkbox"/>	3750			
tmh7	Bridgeport silt loam, rarely flooded	correlated	113BR	65337	<input checked="" type="checkbox"/>	9230			
tmhj	Edalgo clay loam, 3 to 7 percent slopes	correlated	169ED	66136	<input checked="" type="checkbox"/>	11700			
tmhs	Lancaster loam, 3 to 7 percent slopes	correlated	169LF	66143	<input checked="" type="checkbox"/>	8400			
tmht	Lancaster-Hedville complex, 3 to 20 percent slopes	correlated	169LH	66144	<input type="checkbox"/>	93400			
tmht	Lancaster-Hedville complex, 3 to 20 percent slopes	correlated	041LA	64179	<input checked="" type="checkbox"/>	6030			
tmhu	Longford silt loam, 1 to 3 percent slopes	correlated	169LM	66145	<input checked="" type="checkbox"/>	10750			
tmhv	Longford silt loam, 3 to 7 percent slopes	correlated	113LN	65358	<input type="checkbox"/>	23160			
tmhv	Longford silt loam, 3 to 7 percent slopes	correlated	201LO	66558	<input type="checkbox"/>	27000			
tmhv	Longford silt loam, 3 to 7 percent slopes	correlated	169LO	66146	<input checked="" type="checkbox"/>	27000			

NASIS User Guide

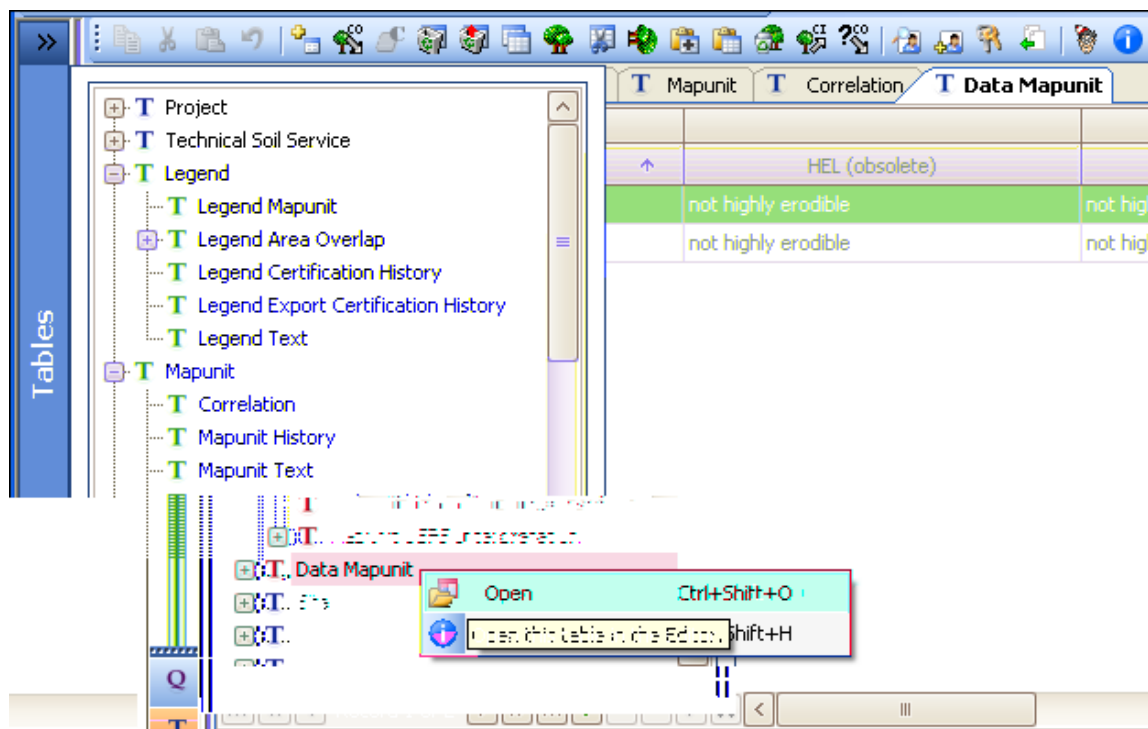
19. Highlight any of the DataMapunit records within the Correlation table and choose **"Load Related for Selected Rows"** from the Table Editor menu, or the Editor toolbar or the Table toolbar.



20. Choose Data Mapunit from the Load Related Parameter box the click OK.



21. On the Explorer panel, open the Data Mapunit table.



Examining the Data Mapunit Object

The Data Mapunit Object contains the Components and their properties, qualities and interpretations expressing the map unit concept for the given map unit to which they are linked. The majority of the time in the database is spent population and editing of the Data Mapunit object.

DMU Description	HEL (obsolete)	HEL Water (obsolete)	HEL Wind (obsolete)	Interpretive Focus	Order of Mapping	Prod Index	CT Septic Potential
113BR	not highly erodible	not highly erodible	not highly erodible				
1696A	not highly erodible	not highly erodible	not highly erodible				

Note: Notice that the HEL columns are now legacy and can not be edited.

The Data Mapunit table contains columns on the description name, the “Interpretive Focus”, “Order of Mapping” and the “Productivity Index”. The remaining columns are pertinent to state interpretations. To examine the Component table, click the **plus sign** (+) on the left side of the record.

DMU Description	HEL (obsolete)	HEL Water (obsolete)	HEL Wind (obsolete)	Interpretive Focus	Order of Mapping	Prod Index	CT Septic Potential
113BR	not highly erodible	not highly erodible	not highly erodible				

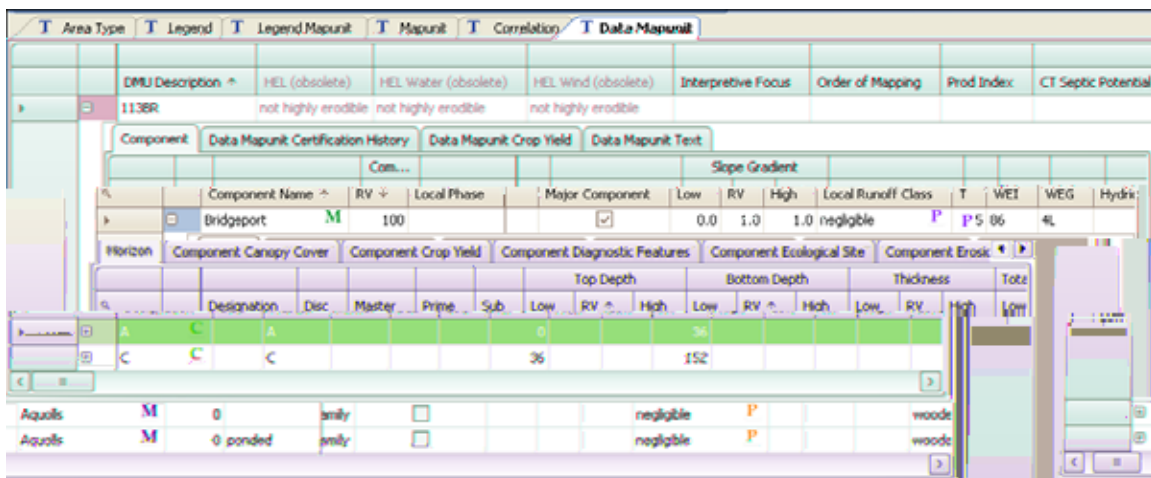
Comp %	Component Name	Local Phase	Taxon Kind	Major Component	SIR phase - obsolete	Slope Gradient
100	Bridgeport	M	series	<input checked="" type="checkbox"/>	ELEV<4000, PE>36	0.0 1.0
0	Aquolls	M	taxon above family	<input type="checkbox"/>		
0	Aquolls ponded	M	taxon above family	<input type="checkbox"/>		

1. Examine the Component table (resized and displayed here). Scroll to the right and become familiar with the columns in this table. For information specific to the column right click on the column header and on the menu choose “View Information”.
2. Columns can be resized, hidden, sorted, and moved based on the user’s preference. Notice the changes in column location in the next image:

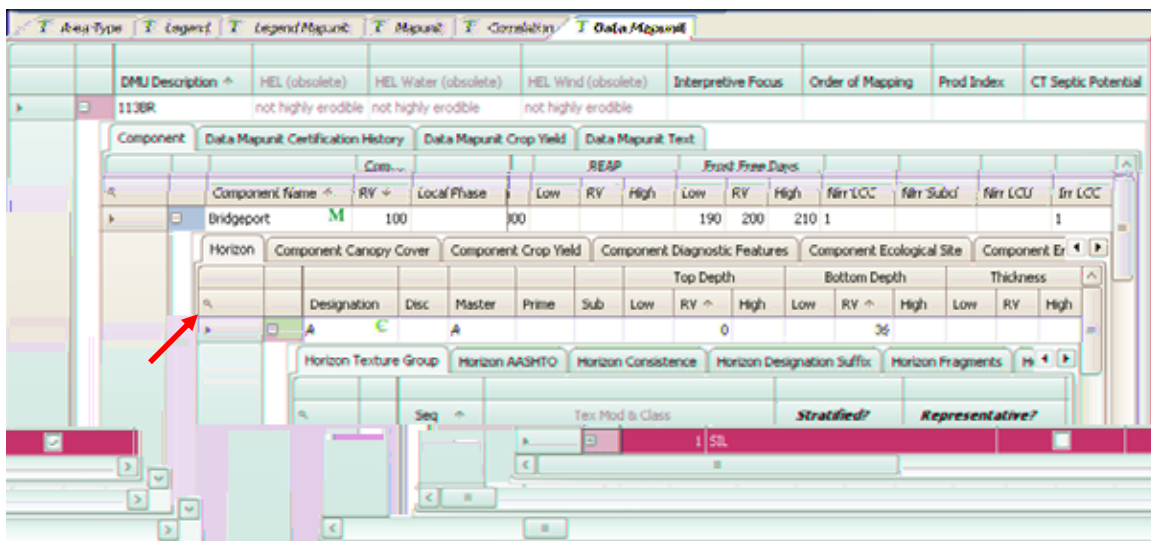
Component Name	RV	Local Phase	Major Component	Slope Gradient	Local Runoff Class	T	WEI	WEG	Hydric
Bridgeport	100		<input checked="" type="checkbox"/>	0.0 1.0 1.0	negligible	P 5	86	4L	
Aquolls	0	family	<input type="checkbox"/>		negligible	P			woode
Aquolls ponded	0	family	<input type="checkbox"/>		negligible	P			woode

3. Examine the Component child tables by clicking the **plus sign**. The Horizon table appears (resized and shown on the next page).

NASIS User Guide



4. Explore the various Component child tables by selecting each tab. Scroll through the tables to become familiar with the columns in each child table.
5. Remember that the columns in the Horizon table can be resized, hidden, sorted, or moved based on the user's preference.
6. Open the Horizon child tables by clicking on the plus sign (+) on the left side of the row. Explore the various Horizon child tables by selecting each tab.



7. In the previous image, notice the depth of the child table and the restriction of screen territory. Maintaining the parent-child relationship has advantages however the disadvantage is the amount of screen required to identify the table and column names. This can be overcome by clicking on the magnifying glass (red arrow in previous image) which promotes the selected table:

NASIS User Guide

T Area Type		T Legend		T Legend Mapunit		T Mapunit		T Correlation		T Data Mapunit							
Horizon		Component Canopy Cover		Component Crop Yield		Component Diagnostic Features		Component Ecological Site		Component Erosion Accelerat							
								Top Depth		Bottom Depth		Thickness		Total Frag			
X		Designation	Disc	Master	Prime	Sub	Low	RV ^	High	Low	RV ^	High	Low	RV	High	Low	R
		A	C	A				0			36						
		C	C	C				36			152						

- To return, click on the **X** that appears in the same location as the magnifying glass.
- As with all NASIS6 tables, each child table can be opened independently of the parent table. Choose the Explorer panel and open the Component table to see all the components within the selected set:

T Mapunit	T Correlation	T Data Mapunit	T Component		
DMU Rec ID	Seq	Low	RV	High	Component Name
65337			0	0	1 Aquolls
65337			0	0	1 Aquolls
66128			60		Bavaria
66128			40		Detroit

- As with all child tables, the lineage band is visible to identify the parent relationship.

T Area Type	T Legend	T Legend Mapunit	T Mapunit	T Correlation	T Data Mapunit	T Component					
Lineage		Comp %			Component						
	DMU Description	DMU Rec ID	Seq	Low	RV	High	Component Name	Local Phase	Taxon Kind	Major Component	SR phase
▶	1138R	65337			100		Bridgeport	M	series	<input checked="" type="checkbox"/>	ELEV<400
⊞	1138R	65337		0	0	1	Aquolls	M	taxon above family	<input type="checkbox"/>	
⊞	1138R	65337		0	0	1	Aquolls	M	taxon above family	<input type="checkbox"/>	
⊞	1698A	66128			60		Bavaria	C	series	<input checked="" type="checkbox"/>	
⊞	1698A	66128			40		Detroit	C	series	<input checked="" type="checkbox"/>	PE>36

- As with all tables, columns can be resized, hidden, sorted, frozen and moved based on the user's preference.
- And last, choose the Explorer panel and open the Horizon table to see all the horizons for all the components within the selected set.

T	Area Type	T	Legend	T	Legend Mapunit	T	Mapunit	T	Correlation	T	Data Mapunit	T	Component	T	Horizon								
Lineage																							
			DMU Description		DMU Rec ID		Comp % (RV)		Component Name		Local Phase		Component Rec ID		Designation		Disc		Master		Prime		Sub
			1138R		65337		100		Bridgeport				137226		LA		C		A				
			1138R		65337		100		Bridgeport				137235		C		C		C				
			1138R		65337		0		Aquolls				1485953		HI		C		H				1
			1138R		65337		0		Aquolls		ponded		1485986		HI		C		H				1
			1698A		66128		60		Bavaria				138660		Ap		C		A				
			1698A		66128		60		Bavaria				138660		An		C		A				

- The lineage band is visible and the columns can be modified.

Summary:

This chapter provided an overview of the objects, tables and columns associated with the Mapunit data (or aggregated data).

Simple navigation procedures were used

- Query for National Area Types

- Using the Load Related command to populate related data

- Opening Parent tables

- Opening Child tables within the Parent table

- Opening Child tables independent of the Parent table

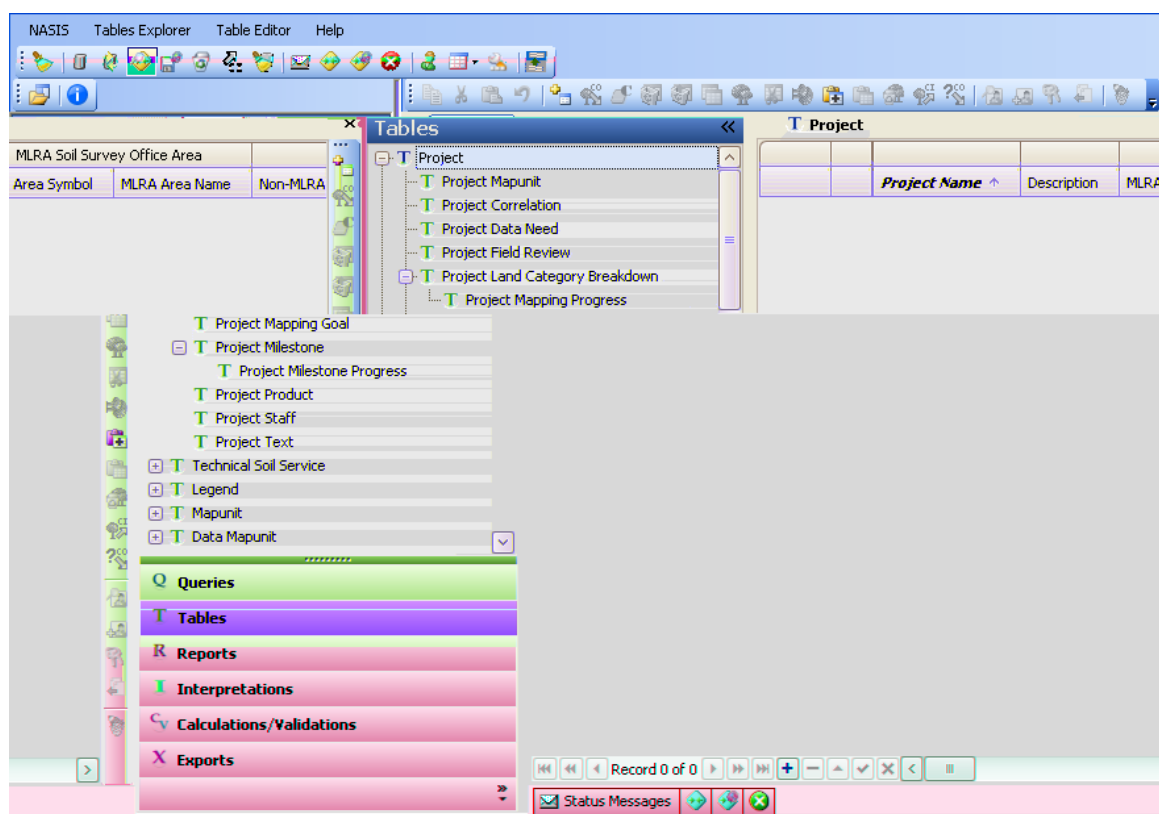
- Understanding Lineage bands

- Using the Hide Columns, Best Fit (all columns), Sort, Freeze and Move features

Chapter 8: Examining the Project Object

In previous versions of NASIS, the Legend table was the primary method of managing soil surveys. The Soil Survey Schedule information was available in the Legend Object. NASIS 6 begins a new method of managing soil survey data. The Project Object is designed to manage all soil survey projects whether it is the traditional soil survey or the update soil survey.

The Project Object is the first table listed in the Table Explorer panel. It is placed as the first to emphasize data management. Open the Tables Explorer panel and click on the plus sign to open the Project tree. The Project table contains several child tables. This chapter will explain the use of the Project Object for the traditional soil survey. Chapter 14 will focus on the Project Object for an update project.



Traditional Soil Survey Projects

All traditional soil surveys have been converted to Projects. This data must be retrieved from the National Database and loaded into the Local Database and then Selected Set.

1. From the Queries Explorer, choose the National query named "Projects by Non-MLRA Soil Survey Area". Enter an Area Symbol of choice:

Selections for Running Query Projects by Non-MLRA Survey Area

Target Tables: ☒ Project

Area Symbol: KS169

Run Cancel

2. The Local Database Setup will appear and the status messages panel will identify the data downloaded from the National Database. Choose Accept

Status Messages

Running national query for target table "Project"...

Number of data objects found:

Project: 1

Mapunit: 91

Data Mapunit: 64

Site: 6

Pedon: 6

Status Messages

3. The query must be run a second time to load the data into the Selected Set.

Selections for Running Query Projects by Non-MLRA Survey Area

Target Tables: ☒ Project ☐ Area

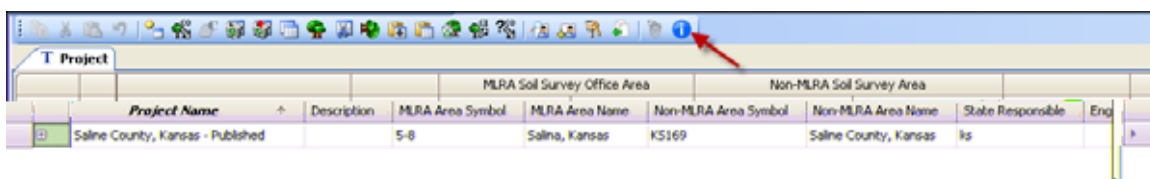
Area Symbol: KS169

Run Cancel

☐ Check Out

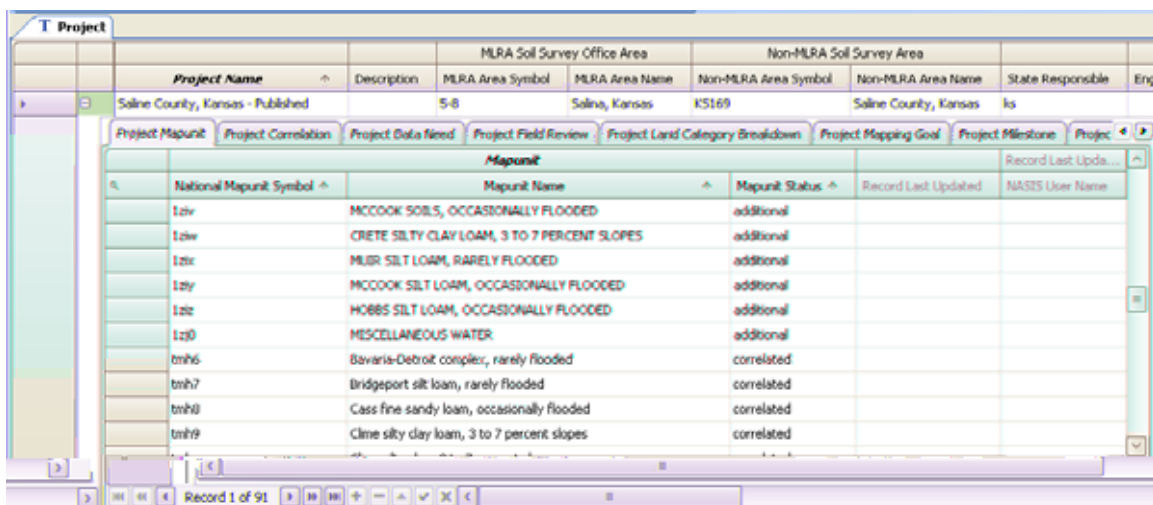
NASIS User Guide

- The Project Table is now populated with the information for KS169.



Project		MLRA Soil Survey Office Area		Non-MLRA Soil Survey Area			
Project Name	Description	MLRA Area Symbol	MLRA Area Name	Non-MLRA Area Symbol	Non-MLRA Area Name	State Responsible	Engl
Saline County, Kansas - Published		5-8	Salina, Kansas	KS169	Saline County, Kansas	ks	

- Scroll to the right and examine the various columns in the **Project** table
- Use the View Information from the Table Editor menu or the View Information button from the Editor toolbar to examine the table explanation and data element explanations in the Project table.
- Open the child tables by clicking on the plus sign on the left side of the row



Project		MLRA Soil Survey Office Area		Non-MLRA Soil Survey Area			
Project Name	Description	MLRA Area Symbol	MLRA Area Name	Non-MLRA Area Symbol	Non-MLRA Area Name	State Responsible	Engl
Saline County, Kansas - Published		5-8	Salina, Kansas	KS169	Saline County, Kansas	ks	

Mapunit					Record Last Upda...
National Mapunit Symbol	Mapunit Name	Mapunit Status	Record Last Updated	NASIS User Name	
1zlv	MCCOOK SOILS, OCCASIONALLY FLOODED	additional			
1zlv	CRETE SILTY CLAY LOAM, 3 TO 7 PERCENT SLOPES	additional			
1zlv	MUR SILT LOAM, RARELY FLOODED	additional			
1zlv	MCCOOK SILT LOAM, OCCASIONALLY FLOODED	additional			
1zlv	HOBBS SILT LOAM, OCCASIONALLY FLOODED	additional			
1zlv	MISCELLANEOUS WATER	additional			
1zlv	Bavaria-Detroit complex, rarely flooded	correlated			
1zlv	Bridgeport silt loam, rarely flooded	correlated			
1zlv	Cass fine sandy loam, occasionally flooded	correlated			
1zlv	Cline silty clay loam, 3 to 7 percent slopes	correlated			

- The **Project Mapunit** table is the first child table. This table is used to capture all the map units, from the Mapunit table, that have been used in this particular survey area.

NASIS User Guide

- New mapunits are not entered in Project Mapunit table. Mapunits are entered and managed in the Mapunit table and are added in the Project Mapunit table via a choice list of the Mapunit table. The data must be “checked out” before the choice list is active. In this image, the letter “E” to the left of the row denotes the row is checked out and available to Edit.

T Project									
Project Name		Description	MLRA Soil Survey Office Area		Non-MLRA Soil Survey Area		State Responsible	English	
E	Saline County, Kansas - Published	S-0	Salina, Kansas	KS169	Saline County, Kansas	ks			
Project Mapunit		Project Correlation	Project Data Need	Project Field Review	Project Land Category Breakdown	Project Mapping Goal	Project Milestone	Project F	
Mapunit									
National Mapunit Symbol		Mapunit Name		Mapunit Status	Record Last Updated	NASIS User Name			
E	tmh6	Bavaria-Detroit complex, rarely flooded		correlated					
E	tmh7	Mapunit NASIS Site Na...		Mapunit Status	Mapunit Name	Mapunit Status			
E	tmh8	MLRA05_Office	tmh6	Bavaria-Detroit complex, rarely flooded	correlated				
E	tmh9	MLRA05_Office	tmh7	Bridgeport silt loam, rare...	correlated				
E	tmh10	MLRA05_Office	tmh8	Cass fine sandy loam, gci...	correlated				
E	tmh11	MLRA05_Office	tmh9	Cline silty clay loam, 3 to...	correlated				
E	tmh12	MLRA05_Office	tmh10	Cline silty clay loam, 3 to...	correlated				
E	tmh13	MLRA05_Office	tmh11	Cline silty clay loam, 3 to...	correlated				
E	tmh14	MLRA05_Office	tmh12	Cline silty clay loam, 3 to...	correlated				
E	tmh15	MLRA05_Office	tmh13	Cline silty clay loam, 3 to...	correlated				
E	tmh16	MLRA05_Office	tmh14	Cline silty clay loam, 3 to...	correlated				
E	tmh17	MLRA05_Office	tmh15	Cline silty clay loam, 3 to...	correlated				
E	tmh18	MLRA05_Office	tmh16	Cline silty clay loam, 3 to...	correlated				
E	tmh19	MLRA05_Office	tmh17	Cline silty clay loam, 3 to...	correlated				
E	tmh20	MLRA05_Office	tmh18	Cline silty clay loam, 3 to...	correlated				
E	tmh21	MLRA05_Office	tmh19	Cline silty clay loam, 3 to...	correlated				
E	tmh22	MLRA05_Office	tmh20	Cline silty clay loam, 3 to...	correlated				
E	tmh23	MLRA05_Office	tmh21	Cline silty clay loam, 3 to...	correlated				
E	tmh24	MLRA05_Office	tmh22	Cline silty clay loam, 3 to...	correlated				
E	tmh25	MLRA05_Office	tmh23	Cline silty clay loam, 3 to...	correlated				
E	tmh26	MLRA05_Office	tmh24	Cline silty clay loam, 3 to...	correlated				
E	tmh27	MLRA05_Office	tmh25	Cline silty clay loam, 3 to...	correlated				
E	tmh28	MLRA05_Office	tmh26	Cline silty clay loam, 3 to...	correlated				
E	tmh29	MLRA05_Office	tmh27	Cline silty clay loam, 3 to...	correlated				
E	tmh30	MLRA05_Office	tmh28	Cline silty clay loam, 3 to...	correlated				
E	tmh31	MLRA05_Office	tmh29	Cline silty clay loam, 3 to...	correlated				
E	tmh32	MLRA05_Office	tmh30	Cline silty clay loam, 3 to...	correlated				
E	tmh33	MLRA05_Office	tmh31	Cline silty clay loam, 3 to...	correlated				
E	tmh34	MLRA05_Office	tmh32	Cline silty clay loam, 3 to...	correlated				
E	tmh35	MLRA05_Office	tmh33	Cline silty clay loam, 3 to...	correlated				
E	tmh36	MLRA05_Office	tmh34	Cline silty clay loam, 3 to...	correlated				
E	tmh37	MLRA05_Office	tmh35	Cline silty clay loam, 3 to...	correlated				
E	tmh38	MLRA05_Office	tmh36	Cline silty clay loam, 3 to...	correlated				
E	tmh39	MLRA05_Office	tmh37	Cline silty clay loam, 3 to...	correlated				
E	tmh40	MLRA05_Office	tmh38	Cline silty clay loam, 3 to...	correlated				
E	tmh41	MLRA05_Office	tmh39	Cline silty clay loam, 3 to...	correlated				
E	tmh42	MLRA05_Office	tmh40	Cline silty clay loam, 3 to...	correlated				
E	tmh43	MLRA05_Office	tmh41	Cline silty clay loam, 3 to...	correlated				
E	tmh44	MLRA05_Office	tmh42	Cline silty clay loam, 3 to...	correlated				
E	tmh45	MLRA05_Office	tmh43	Cline silty clay loam, 3 to...	correlated				
E	tmh46	MLRA05_Office	tmh44	Cline silty clay loam, 3 to...	correlated				
E	tmh47	MLRA05_Office	tmh45	Cline silty clay loam, 3 to...	correlated				
E	tmh48	MLRA05_Office	tmh46	Cline silty clay loam, 3 to...	correlated				
E	tmh49	MLRA05_Office	tmh47	Cline silty clay loam, 3 to...	correlated				
E	tmh50	MLRA05_Office	tmh48	Cline silty clay loam, 3 to...	correlated				
E	tmh51	MLRA05_Office	tmh49	Cline silty clay loam, 3 to...	correlated				
E	tmh52	MLRA05_Office	tmh50	Cline silty clay loam, 3 to...	correlated				
E	tmh53	MLRA05_Office	tmh51	Cline silty clay loam, 3 to...	correlated				
E	tmh54	MLRA05_Office	tmh52	Cline silty clay loam, 3 to...	correlated				
E	tmh55	MLRA05_Office	tmh53	Cline silty clay loam, 3 to...	correlated				
E	tmh56	MLRA05_Office	tmh54	Cline silty clay loam, 3 to...	correlated				
E	tmh57	MLRA05_Office	tmh55	Cline silty clay loam, 3 to...	correlated				
E	tmh58	MLRA05_Office	tmh56	Cline silty clay loam, 3 to...	correlated				
E	tmh59	MLRA05_Office	tmh57	Cline silty clay loam, 3 to...	correlated				
E	tmh60	MLRA05_Office	tmh58	Cline silty clay loam, 3 to...	correlated				
E	tmh61	MLRA05_Office	tmh59	Cline silty clay loam, 3 to...	correlated				
E	tmh62	MLRA05_Office	tmh60	Cline silty clay loam, 3 to...	correlated				
E	tmh63	MLRA05_Office	tmh61	Cline silty clay loam, 3 to...	correlated				
E	tmh64	MLRA05_Office	tmh62	Cline silty clay loam, 3 to...	correlated				
E	tmh65	MLRA05_Office	tmh63	Cline silty clay loam, 3 to...	correlated				
E	tmh66	MLRA05_Office	tmh64	Cline silty clay loam, 3 to...	correlated				
E	tmh67	MLRA05_Office	tmh65	Cline silty clay loam, 3 to...	correlated				
E	tmh68	MLRA05_Office	tmh66	Cline silty clay loam, 3 to...	correlated				
E	tmh69	MLRA05_Office	tmh67	Cline silty clay loam, 3 to...	correlated				
E	tmh70	MLRA05_Office	tmh68	Cline silty clay loam, 3 to...	correlated				
E	tmh71	MLRA05_Office	tmh69	Cline silty clay loam, 3 to...	correlated				
E	tmh72	MLRA05_Office	tmh70	Cline silty clay loam, 3 to...	correlated				
E	tmh73	MLRA05_Office	tmh71	Cline silty clay loam, 3 to...	correlated				
E	tmh74	MLRA05_Office	tmh72	Cline silty clay loam, 3 to...	correlated				
E	tmh75	MLRA05_Office	tmh73	Cline silty clay loam, 3 to...	correlated				
E	tmh76	MLRA05_Office	tmh74	Cline silty clay loam, 3 to...	correlated				
E	tmh77	MLRA05_Office	tmh75	Cline silty clay loam, 3 to...	correlated				
E	tmh78	MLRA05_Office	tmh76	Cline silty clay loam, 3 to...	correlated				
E	tmh79	MLRA05_Office	tmh77	Cline silty clay loam, 3 to...	correlated				
E	tmh80	MLRA05_Office	tmh78	Cline silty clay loam, 3 to...	correlated				
E	tmh81	MLRA05_Office	tmh79	Cline silty clay loam, 3 to...	correlated				
E	tmh82	MLRA05_Office	tmh80	Cline silty clay loam, 3 to...	correlated				
E	tmh83	MLRA05_Office	tmh81	Cline silty clay loam, 3 to...	correlated				
E	tmh84	MLRA05_Office	tmh82	Cline silty clay loam, 3 to...	correlated				
E	tmh85	MLRA05_Office	tmh83	Cline silty clay loam, 3 to...	correlated				
E	tmh86	MLRA05_Office	tmh84	Cline silty clay loam, 3 to...	correlated				
E	tmh87	MLRA05_Office	tmh85	Cline silty clay loam, 3 to...	correlated				
E	tmh88	MLRA05_Office	tmh86	Cline silty clay loam, 3 to...	correlated				
E	tmh89	MLRA05_Office	tmh87	Cline silty clay loam, 3 to...	correlated				
E	tmh90	MLRA05_Office	tmh88	Cline silty clay loam, 3 to...	correlated				
E	tmh91	MLRA05_Office	tmh89	Cline silty clay loam, 3 to...	correlated				
E	tmh92	MLRA05_Office	tmh90	Cline silty clay loam, 3 to...	correlated				
E	tmh93	MLRA05_Office	tmh91	Cline silty clay loam, 3 to...	correlated				
E	tmh94	MLRA05_Office	tmh92	Cline silty clay loam, 3 to...	correlated				
E	tmh95	MLRA05_Office	tmh93	Cline silty clay loam, 3 to...	correlated				
E	tmh96	MLRA05_Office	tmh94	Cline silty clay loam, 3 to...	correlated				
E	tmh97	MLRA05_Office	tmh95	Cline silty clay loam, 3 to...	correlated				
E	tmh98	MLRA05_Office	tmh96	Cline silty clay loam, 3 to...	correlated				
E	tmh99	MLRA05_Office	tmh97	Cline silty clay loam, 3 to...	correlated				
E	tmh100	MLRA05_Office	tmh98	Cline silty clay loam, 3 to...	correlated				
E	tmh101	MLRA05_Office	tmh99	Cline silty clay loam, 3 to...	correlated				
E	tmh102	MLRA05_Office	tmh100	Cline silty clay loam, 3 to...	correlated				
E	tmh103	MLRA05_Office	tmh101	Cline silty clay loam, 3 to...	correlated				
E	tmh104	MLRA05_Office	tmh102	Cline silty clay loam, 3 to...	correlated				
E	tmh105	MLRA05_Office	tmh103	Cline silty clay loam, 3 to...	correlated				
E	tmh106	MLRA05_Office	tmh104	Cline silty clay loam, 3 to...	correlated				
E	tmh107	MLRA05_Office	tmh105	Cline silty clay loam, 3 to...	correlated				
E	tmh108	MLRA05_Office	tmh106	Cline silty clay loam, 3 to...	correlated				
E	tmh109	MLRA05_Office	tmh107	Cline silty clay loam, 3 to...	correlated				
E	tmh110	MLRA05_Office	tmh108	Cline silty clay loam, 3 to...	correlated				
E	tmh111	MLRA05_Office	tmh109	Cline silty clay loam, 3 to...	correlated				
E	tmh112	MLRA05_Office	tmh110	Cline silty clay loam, 3 to...	correlated				
E	tmh113	MLRA05_Office	tmh111	Cline silty clay loam, 3 to...	correlated				
E	tmh114	MLRA05_Office	tmh112	Cline silty clay loam, 3 to...	correlated				
E	tmh115	MLRA05_Office	tmh113	Cline silty clay loam, 3 to...	correlated				
E	tmh116	MLRA05_Office	tmh114	Cline silty clay loam, 3 to...	correlated				
E	tmh117	MLRA05_Office	tmh115	Cline silty clay loam, 3 to...	correlated				
E	tmh118	MLRA05_Office	tmh116	Cline silty clay loam, 3 to...	correlated				
E	tmh119	MLRA05_Office	tmh117	Cline silty clay loam, 3 to...	correlated				
E	tmh120	MLRA05_Office	tmh118	Cline silty clay loam, 3 to...	correlated				
E	tmh121	MLRA05_Office	tmh119	Cline silty clay loam, 3 to...	correlated				
E	tmh122	MLRA05_Office	tmh120	Cline silty clay loam, 3 to...	correlated				
E	tmh123	MLRA05_Office	tmh121	Cline silty clay loam, 3 to...	correlated				
E	tmh124	MLRA05_Office	tmh122	Cline silty clay loam, 3 to...	correlated				
E	tmh125	MLRA05_Office	tmh123	Cline silty clay loam, 3 to...	correlated				
E	tmh126	MLRA05_Office	tmh124	Cline silty clay loam, 3 to...	correlated				
E	tmh127	MLRA05_Office	tmh125	Cline silty clay loam, 3 to...	correlated				
E	tmh128	MLRA05_Office	tmh126	Cline silty clay loam, 3 to...	correlated				
E	tmh129	MLRA05_Office	tmh127	Cline silty clay loam, 3 to...	correlated				
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E	tmh131	MLRA05_Office	tmh129	Cline silty clay loam, 3 to...	correlated				
E	tmh132	MLRA05_Office	tmh130	Cline silty clay loam, 3 to...	correlated				
E	tmh133	MLRA05_Office	tmh131	Cline silty clay loam, 3 to...	correlated				
E	tmh134	MLRA05_Office	tmh132	Cline silty clay loam, 3 to...	correlated				
E	tmh135	MLRA05_Office	tmh133	Cline silty clay loam, 3 to...	correlated				
E	tmh136	MLRA05_Office	tmh134	Cline silty clay loam, 3 to...	correlated				
E	tmh137	MLRA05_Office	tmh135	Cline silty clay loam, 3 to...	correlated				
E	tmh138	MLRA05_Office	tmh136	Cline silty clay loam, 3 to...	correlated				
E	tmh139	MLRA05_Office	tmh137	Cline silty clay loam, 3 to...	correlated				
E	tmh140	MLRA05_Office	tmh138	Cline silty clay loam, 3 to...	correlated				
E	tmh141	MLRA05_Office	tmh139	Cline silty clay loam, 3 to...	correlated				
E	tmh142	MLRA05_Office	tmh140	Cline silty clay loam, 3 to...	correlated				
E	tmh143	MLRA05_Office	tmh141	Cline silty clay loam, 3 to...	correlated				
E	tmh144	MLRA05_Office	tmh142	Cline silty clay loam, 3 to...	correlated				
E	tmh145	MLRA05_Office	tmh143	Cline silty clay loam, 3 to...	correlated				
E	tmh146	MLRA05_Office	tmh144	Cline silty clay loam, 3 to...	correlated				
E	tmh147	MLRA05_Office	tmh145	Cline silty clay loam, 3 to...	correlated				
E	tmh148	MLRA05_Office	tmh146	Cline silty clay loam, 3 to...	correlated				
E	tmh149	MLRA05_Office	tmh147	Cline silty clay loam, 3 to...	correlated				
E	tmh150	MLRA05_Office	tmh148	Cline silty clay loam, 3 to...	correlated				
E	tmh151	MLRA05_Office	tmh149	Cline silty clay loam, 3 to...	correlated				
E	tmh152	MLRA05_Office	tmh150	Cline silty clay loam, 3 to...	correlated				
E	tmh153	MLRA05_Office	tmh151	Cline silty clay loam, 3 to...	correlated				
E	tmh154	MLRA05_Office	tmh152	Cline silty clay loam, 3 to...	correlated				
E	tmh155	MLRA05_Office	tmh153	Cline silty clay loam, 3 to...	correlated				
E	tmh156	MLRA05_Office	tmh154	Cline silty clay loam, 3 to...	correlated				
E	tmh157	MLRA05_Office	tmh155	Cline silty clay loam, 3 to...	correlated				
E	tmh158	MLRA05_Office	tmh156	Cline silty clay loam, 3 to...	correlated				
E	tmh159	MLRA05_Office	tmh157	Cline silty clay loam, 3 to...	correlated				
E	tmh160	MLRA05_Office	tmh158	Cline silty clay loam, 3 to...	correlated				
E	tmh161	MLRA05_Office	tmh159	Cline silty clay loam, 3 to...	correlated				
E	tmh162	MLRA05_Office	tmh160	Cline silty clay loam, 3 to...	correlated				
E	tmh163	MLRA05_Office	tmh161	Cline silty clay loam, 3 to...	correlated				
E	tmh164	MLRA05_Office	tmh162	Cline silty clay loam, 3 to...	correlated				
E	tmh165	MLRA05_Office	tmh163	Cline silty clay loam, 3 to...	correlated				
E	tmh166	MLRA05_Office	tmh164	Cline silty clay loam, 3 to...	correlated				
E	tmh167	MLRA05_Office	tmh165	Cline silty clay loam, 3 to...	correlated				
E	tmh168	MLRA05_Office	tmh166	Cline silty clay loam, 3 to...	correlated				
E	tmh169	MLRA05_Office	tmh167	Cline silty clay loam, 3 to...	correlated				
E	tmh170	MLRA05_Office	tmh168	Cline silty clay loam, 3 to...	correlated				
E	tmh171	MLRA05_Office	tmh169	Cline silty clay loam, 3 to...	correlated				
E	tmh172	MLRA05_Office	tmh170	Cline silty clay loam, 3 to...	correlated				
E	tmh173	MLRA05_Office	tmh171	Cline silty clay loam, 3 to...	correlated				
E	tmh174	MLRA05_Office	tmh172	Cline silty clay loam, 3 to...	correlated				
E	tmh175	MLRA05_Office	tmh173	Cline silty clay loam, 3 to...	correlated				
E	tmh176	MLRA05_Office	tmh174	Cline silty clay loam, 3 to...	correlated				
E	tmh177	MLRA05_Office	tmh175	Cline silty clay loam, 3 to...	correlated				
E	tmh178	MLRA05_Office	tmh176	Cline silty clay loam, 3 to...	correlated				
E	tmh179	MLRA05_Office	tmh177	Cline silty clay loam, 3 to...	correlated				
E	tmh180	MLRA05_Office	tmh178	Cline silty clay loam, 3 to...	correlated				
E	tmh181	MLRA05_Office	tmh179	Cline silty clay loam, 3 to...	correlated				
E	tmh182	MLRA05_Office	tmh180	Cline silty clay loam, 3 to...	correlated				
E	tmh183	MLRA05_Office	tmh181	Cline silty clay loam, 3 to...	correlated				
E	tmh184	MLRA05_Office	tmh1						

12. The **Project Field Review** table stores all field review reports

T Project							
Project Name		Description	MLRA Soil Survey Office Area		Non-MLRA Soil Survey Area		State Responsible
Project Name	Description	MLRA Area Symbol	MLRA Area Name	Non-MLRA Area Symbol	Non-MLRA Area Name	State Responsible	English
Saline County, Kansas - Published	5-8	Saline, Kansas	KS169	Saline County, Kansas	Is		
Project Field Review							
Date	Author	Correlation Event	Review Document	Record Last Updated	NASIS User Name	Rec ID	
10/00/2009	William Webermiller	progress field review	Progress Field Rev...	10/00/2009 14:02:10	Flonell, Paul P...	10121	

13. The **Project Land Category Breakdown** table identifies the various land ownerships within the Project area. The child table is the **Project Mapping Progress**.

T Project									
MLRA Soil Survey Office Area									
Non-MLRA Soil Survey Area									
MLRA Area Name	State Responsible	English	Project Name	Description	MLRA Area Symbol	MLRA Area Name	Non-MLRA Area Symbol	Non-MLRA Area Name	State Responsible
Saline County, Kansas	Ks		Saline County, Kansas - Published	5-8		Saline, Kansas	KS169	Saline County, Kansas	Ks
Project Field Review									
Project Land Category Breakdown									
Project Mapping Data									
Project Milestone									
Project Product									
Project Status									
Record Last Updated By									
NASIS User Name									
Project Staff Meeting									
NASIS User Name									
Record Last Updated									
Project Staff Meeting									
NASIS User Name									
Record Last Updated									
Project Staff Meeting									
NASIS User Name									
Record Last Updated									
Project Staff Meeting									
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Project									

14. The **Project Mapping Goal** table is used to identify the staff and individual acre goals.

T Project							
Project Name		Description	MLRA Soil Survey Office Area		Non-MLRA Soil Survey Area		State Responsible
Project Name	Description	MLRA Area Symbol	MLRA Area Name	Non-MLRA Area Symbol	Non-MLRA Area Name	State Responsible	English
Reno County, Kansas - Published	5-8	Saline, Kansas	KS155	Reno County, Kansas	Is		
Project Mapping Goal							
Fiscal Year	Initial NRCS Acres Goal	Initial Cooperator Acres Goal	Update NRCS Acres Goal	Update Cooperator Acres Goal	Project Staff Me...	NASIS User Name	Record
1993			110000				
1994			145000				
1995			115000				
1996			70000				
1997			70000				
1998			30000				
1999			45000		Warner, John		
2000			15000		Gray, Larry		

NASIS User Guide

15. The **Project Milestone** is a new table used to identify those various management items that are essential to the completion of the project.

Project									
Project Name		Description	MLRA Area Symbol	MLRA Area Name	Non-MLRA Area Symbol	Non-MLRA Area Name	State Responsible	English Edit	
County, Kansas - Published	5-8	Salina, Kansas	KS155	Reno County, Kansas	Is				
Project Data Need	Project Field Review	Project Land Category Breakdown	Project Mapping Goal	Project Milestone	Project Product	Project Staff	Project Text		
Milestone Type		Milestone Description	Scheduled Start Date	Scheduled Completion Date	Milestone Date Started	Milestone Date Completed			
Digital map finding					10/15/1999	11/10/1999			
Digitize maps					06/20/1999	09/30/1999			
English edit						04/01/2000			
Map compilation					01/12/1999	06/12/1999			
Map compilation certification						06/18/1999			
Maps to NCGC						10/10/2000			
Maps to printer						00/07/2002			
SSURGO archived						08/09/2005			
SSURGO certification						10/15/1999			
SSURGO digital review					10/04/1999				
Traditional map									
Text received at NCGC						10/01/2001			
Text to printer						11/07/2002			
Technical Review						10/30/1999			
County, Kansas - Published	5-8	Salina, Kansas	KS169	Saline County, Kansas	Is				

16. The **Project Product** table identifies the various publication products

Project									
Project Name		Description	MLRA Area Symbol	MLRA Area Name	Non-MLRA Area Symbol	Non-MLRA Area Name	State Responsible	English Edit	
County, Kansas - Published	5-8	Salina, Kansas	KS155	Reno County, Kansas	Is				
Project Data Need	Project Field Review	Project Land Category Breakdown	Project Mapping Goal	Project Milestone	Project Product	Project Staff	Project Text		
Product Type		Product Description	Scheduled Delivery	Product Text Formatted	Product Text Proofed	Product Text Completed	Product Text Submitted		
soil survey report on cd-rom			04/24/2000						
traditional bound manuscript			04/15/2003						
web publication			02/28/2005						
County, Kansas - Published	5-8	Salina, Kansas	KS169	Saline County, Kansas	Is				

17. The **Project Staff** identifies those individuals working on the particular project.

Project									
Project Name		Description	MLRA Area Symbol	MLRA Area Name	Non-MLRA Area Symbol	Non-MLRA Area Name	State Responsible	English Edit	
County, Kansas - Published	5-8	Salina, Kansas	KS155	Reno County, Kansas	Is				
Project Data Need	Project Field Review	Project Land Category Breakdown	Project Mapping Goal	Project Milestone	Project Product	Project Staff	Project Text		
Project Staff Member		Record Last Updated	NASIS User Name	Rec ID					
Gray, Larry				182					
Murphy, Bob				6833					
Warner, John				181					

NASIS User Guide

18. The **Project Text** table stores all documentation pertaining to the Project.

T Project									
		MLRA Soil Survey Office Area			Non-MLRA Soil Survey Area				
Project Name		Description	MLRA Area Symbol	MLRA Area Name	Non-MLRA Area Symbol	Non-MLRA Area Name	State Responsible	English Edit	
Beno County, Kansas - Published			S-8	Salina, Kansas	K5165	Beno County, Kansas	ks		
Saline County, Kansas - Published			S-8	Salina, Kansas	K5169	Saline County, Kansas	ks		
Project Data Need		Project Field Review		Project Land Category Breakdown		Project Mapping Goal		Project Milestone	
Project Product		Project Staff		Project Text					
Date		Author	Kind	Category	Subcategory	Text Entry	Record Last Updated	NASIS User Name	Rec ID
10/08/2009		Paul R. Finnell	project plan				10/08/2009 14:39:24	Finnell, Paul R.	10062

Chapter 14 will provide additional information on the use of the Project object for update projects.

Chapter 9: Examining the Point Data Objects

The Site, Pedon, Site Association and Transect objects contain numerous tables for entering and maintaining site and point data in NASIS. In NASIS, the Site, Pedon, Site Association, and Transect tables can be populated independently of the mapunit data. Links between the major areas can be established between the Legend and Mapunit to the Site Area Overlap and between the Pedon and the Component in the Component Pedon table.

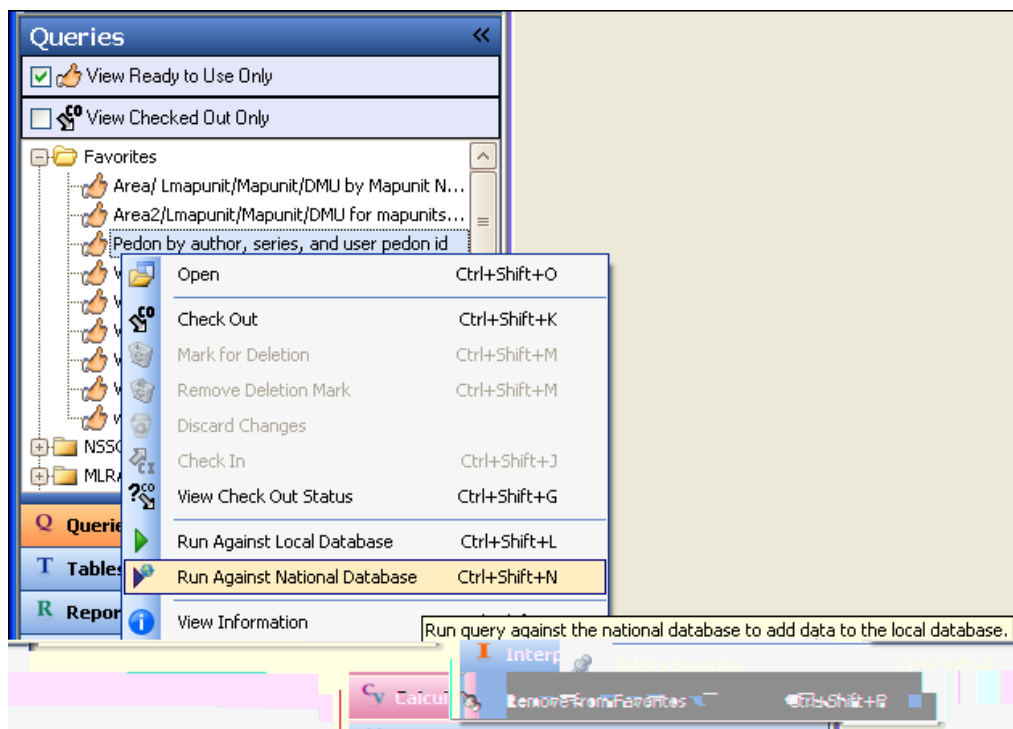
Point data can be entered directly into NASIS6. PedonPC is a software tool that can also be used for Point data population. The data can then be imported directly into NASIS6 and uploaded to the national server. PedonPC can be downloaded from the NASIS web page. The software includes its own Getting Started manual.

In NASIS, Point Data can be entered directly using the interface or PedonPC. PedonPC data is directly imported into the NASIS6 Local Database (see Chapter 10).

This is a scenario based exercise in which the user can follow along exactly as written or can utilize data from their survey area.

Loading Existing Site and Pedon Records

1. The first step is to populate the Local Database with pedon data. Choose the national query “Pedon by author, series and user pedonid” and run against National Database. Select “Site” as the Target Table:



NASIS User Guide

2. In the **Parameter** fields, enter the Describers name (use wildcards if necessary), Use an asterisk for both the "Soil Name as Sampled" and the "User Pedon ID" fields.

Selections for Running Query Pedon by author , series, and user pedon id

Target Tables: ☐ Pedon ☒ Site ☐ Transect

Describer's Name: *finnell*

Soil Name As Sampled: *

User Pedon ID: *

Run Cancel

3. The Local Database Setup will appear and identify those Sites, Pedons and Transects that are available to download. View the Status Messages to verify the number of Pedons, Sites and Transects. Then click "Accept".

Local Database

Run queries against the national database to select more data.

Accept

Project	Technical Soil Service	Legend	Mapunit	Data Mapunit	Site	Pedon	Transect	Site Association	Distribution Metadata
Location	User Pedon ID	Pedon Record Origin	Describer's Name	Soil Name As Sampled	Correlat				
National	99KS161007	Converted from PDP 3.x	W. WehmueLLer, M.D. Ransom, J.C. ...	Benfield					
National	94MO197008	Converted from PDP 3.x	Henry Ferguson Kenneth Gregg Jam...	Bevier					
National	92KS129002	Converted from PDP 3.x	Jim McNowell, Chad Remley, Bob Tri...	Bigbow					
National	05NE111010		R. HAMMER, A. PEREZ, C.MARKLEY...	Birdwood					
National	05NE111010		R. HAMMER, A. PEREZ, C.MARKLEY...	Birdwood					

Plinsky, L. Miller, J.C. R...	Bismarckgrove
Plinsky, L. Miller, J.C. R...	Bismarckgrove
Bill WehmueLLer, Chad ...	Bismarckgrove
Plinsky, L. Miller, J.C. R...	Bismarckgrove
Plinsky, L. Miller, J.C. R...	Bismarckgrove
Bill WehmueLLer, Chad ...	Bismarckgrove

Location	User Pedon ID	Pedon Record Origin	Describer's Name	Soil Name As Sampled	Correlat
National	01KS177005	NASIS	B. Evans, B. I		
National	01KS177010	NASIS	B. Evans, B. I		
National	02KS087003	NASIS	Bruce Evans,		
National	01KS177010	NASIS	B. Evans, B. I		
National	01KS177005	NASIS	B. Evans, B. I		
National	02KS087003	NASIS	Bruce Evans,		

Record 33 of 769

Status Messages

Preparing query "Pedon by author, series, and user pedon id"...

Running national query for target table "Pedon"...

Number of data objects found:

Site: 270

Pedon: 271

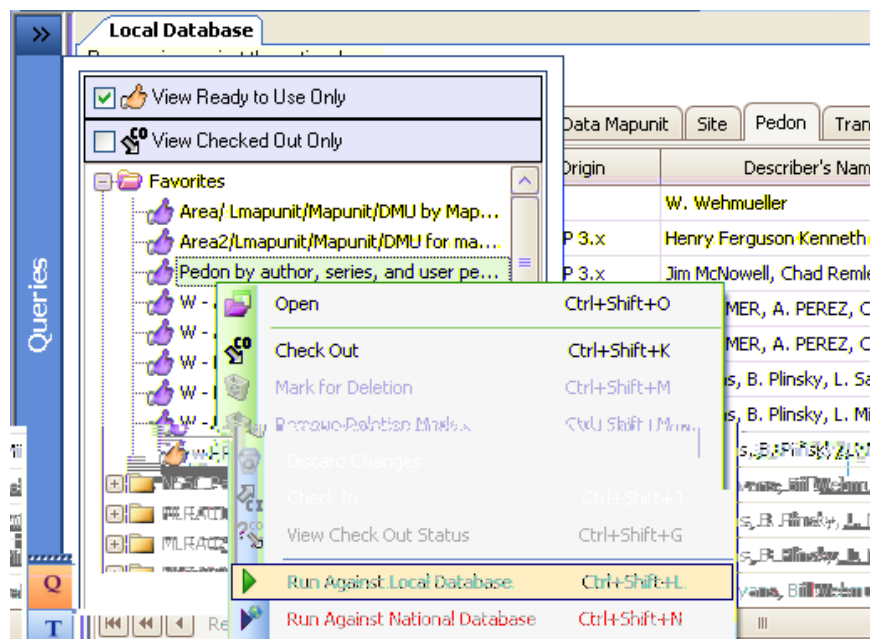
Transect: 5

Number to download

Status Messages Local Conflicts Upload Conflicts Validation Resu

NASIS User Guide

4. The query is run a second time against the Local Database with the same parameters to load pedon data from the local database into the selected set. Note the Target tables now include the Pedon, Site and Transect tables.



Selections for Running Query Pedon by author, series, and user pedon id

Target Tables:

- ☒ Pedon
- ☒ Site
- ☐ Site Observation
- ☒ Transect

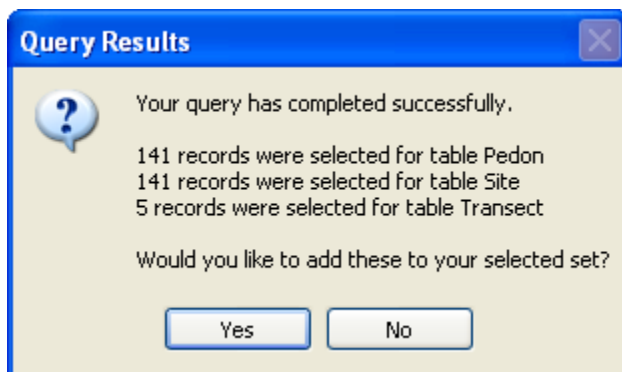
Describer's Name: *finnell*

Soil Name As Sampled: *

User Pedon ID: *|

☐ Check Out

5. Click "Yes" to accept the results.



NASIS User Guide

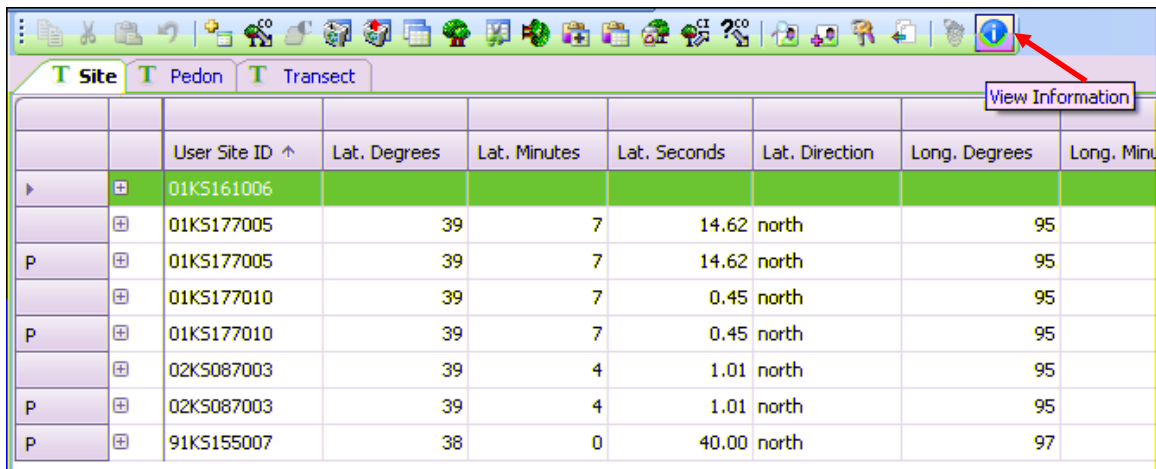
6. From the Tables Explorer panel, open the Site, Pedon and Transect tables.

T Site T Pedon T Transect										
		User Site ID ↑	Lat. Degrees	Lat. Minutes	Lat. Seconds	Lat. Direction	Long. Degrees	Long. Minutes	Long. Seconds	Long. Direction
		01KS161006								
		01KS177005	39	7	14.62	north	95	55	28.28	west
P		01KS177005	39	7	14.62	north	95	55	28.28	west
		01KS177010	39	7	0.45	north	95	59	3.43	west
P		01KS177010	39	7	0.45	north	95	59	3.43	west
		02KS087003	39	4	1.01	north	95	22	56.89	west
P		02KS087003	39	4	1.01	north	95	22	56.89	west
P		91KS155007	38	0	40.00	north	97	55	20.00	west

Examining the Site Tables

The Site table describes the location and characteristics of a particular geographic location. A site may be a specific location such as a point where a soil profile description is taken, or it may have some spatial area that is chosen to be treated as a single point. Various kinds of data such as soil profile descriptions, lab data, vegetative data, and so forth, may be linked to a site in this database.

1. Open the **Site** tab.
2. Use the View Information from the Table Editor menu or the View Information button from the Editor toolbar to examine the table explanation and data element explanations in the Site table.



T Site T Pedon T Transect										
		User Site ID ↑	Lat. Degrees	Lat. Minutes	Lat. Seconds	Lat. Direction	Long. Degrees	Long. Minutes	Long. Seconds	Long. Direction
		01KS161006								
		01KS177005	39	7	14.62	north	95	55	28.28	west
P		01KS177005	39	7	14.62	north	95	55	28.28	west
		01KS177010	39	7	0.45	north	95	59	3.43	west
P		01KS177010	39	7	0.45	north	95	59	3.43	west
		02KS087003	39	4	1.01	north	95	22	56.89	west
P		02KS087003	39	4	1.01	north	95	22	56.89	west
P		91KS155007	38	0	40.00	north	97	55	20.00	west

3. Scroll to the right and examine the various columns in the **Site** table,

NASIS User Guide

- Click on the plus sign (+) to open the child tables.

The screenshot shows the 'Site' tab selected in the top navigation bar. Below the main table, the 'Site Observation' child table is expanded, showing a single row with the following data:

Observation Date	Observation Date Kind	Air Photo ID	Surface Water Kind	Surface Water Depth	Hydrology Status
10/23/2001	actual site observation date	12	none observed		

Note: The Site Observation table records the date that the various observation or analytical data was collected for the specific site or location. Soil or site properties that may change with time are also recorded here. If a site is revisited at a later date for additional data collection, a new row with the appropriate date is entered in this table. Child tables exist for properties that may have multiple entries. Click on the plus sign to open and view all the child tables.

The screenshot shows the 'Site' tab selected. Multiple child tables are expanded, including 'Site Observation', 'Site Area Overlap', 'Site Associated Soils', 'Site Geomorphic Description', 'Site Mapunit Overlap', and 'Site Other Vegetative Classification'. The 'Site Observation' table is highlighted, showing the same data as in the previous screenshot.

Note: The Site Soil Moisture table describes the soil moisture profile at this site at the time of observation. A soil moisture profile may be recorded on different dates and each Observation date is a new row and the observation recorded for that specific date. This same concept is used for the Site Erosion Accelerated, Site Existing Vegetation, Site Observation Text and the Site Soil Temperature tables.

- Use the View Information menu option or toolbar button to examine the information on each table or other columns in these tables.

NASIS User Guide

- Click on the **Site Area Overlap** tab. This table is used to record the geographic spatial area overlaps such as MLRA, county, state or soil survey area in which the specific site occurs.

Area Type NASIS Site Name	Area Type Name	Area Symbol	Area Name	Record Last Updated	NASIS User
vSSC Pangaea	County of Parish	55029	Clout		
vSSC Pangaea	MLRA	74	Central Plains Sandstone Hill		
vSSC Pangaea	Arkansas Landmark	45	Arkansas		
vSSC Pangaea	USGS Soil Moisture Categories	0000000	Very Dry		
vSSC Pangaea	Physiographic Division	1h	Interior Plains		
vSSC Pangaea	Physiographic Province	GP	Great Plains Province		
vSSC Pangaea	Physiographic Section	3LE	Plains Loess		
MLRA vSSC Pangaea	State Physiographic Area	55	San Joaquin		

- Click on the **Site Geomorphic Description** tab. This table is populated with the various geomorphic feature types used to describe the site.

Feature Type	Feature Name (singular)	Feature Modifier	Feature ID	Exists on Feature ID	Record Last Updated	NASIS User
Landform	flood plain		2	1		
Landscape	river valley		1			

- Click on the **Site Parent Material** tab. This table is populated with the various parent materials that form the soil at the site. Multiple Parent Materials can be recorded using the Vertical Order.

Vertical Order	Top Depth	Bottom Depth	Textural Modifier	General Modifier	Kind	Origin	Weathering	Record Last Updated	NASIS User
1			coarse-silty		alluvium				

- Click on the remaining tables, scrolling through each table to view the columns associated with the table. Use the View Information menu option or toolbar button to examine the information on each table or use the Right click menu on each column to View Information on each column in these tables.

Examining the Link between Sites and Mapunits

Click on the **Site Mapunit Overlap** tab.

This table links the site to the specific map unit in which the site was described. Scroll through the table and view the various columns.

Note: *The Site Mapunit Overlap table is used to link the specific Site to the specific Legend and the specific Mapunit in which this Site is described.*

The first few columns identify the Legend in which the Site is linked.

The screenshot shows the 'Site Mapunit Overlap' tab in the NASIS application. The top section displays site coordinates: User Site ID 01K5029006, Lat. Degrees 39, Lat. Minutes 35, Lat. Seconds 2.05, Lat. Direction north, Long. Degrees 97, Long. Minutes 34, Long. Seconds 57.22, and Long. Direction west. Below this, the 'Site Mapunit Overlap' tab is selected, showing a table with columns: Area Type NASIS Site Name, Area Type Name, Area Symbol, Area Name, Survey Status, and Geographic Application. The data row shows: NSSC Pangaea, Non-MLRA Soil Survey Area, K5029, Cloud County, Kansas, update needed, and current wherever m.

Scrolling to the right, the table is used to identify the map unit within the specific Legend in which the Site was described.

The screenshot shows the 'Site Mapunit Overlap' tab in the NASIS application, scrolled to the right. The top section displays site coordinates: User Site ID 01K5029006, Lat. Degrees 39, Lat. Minutes 35, Lat. Seconds 2.05, Lat. Direction north, Long. Degrees 97, Long. Minutes 34, Long. Seconds 57.22, and Long. Direction west. Below this, the 'Site Mapunit Overlap' tab is selected, showing a table with columns: National Mapunit Symbol, Mapunit Name, Mapunit Status, Mapunit Symbol, and Record Last Updated. The data row shows: 1wwwq, CARR FINE SANDY LOAM, OCCASIONALLY FLOODED, additional, CA, and Record Last Updated.

The map units must be available in the Local Database in order to appear as a choice in the Mapunit Name field.

Examining the Pedon Tables

1. Open the **Pedon** tab.

Site/Site Observation								
		User Site ID	Site Rec ID	Observation Date	Observation Date Kind	Site Observation Rec ID	User Pedon ID	Pedon Record Origin
P		26192-011	116257	4/15/1982 12:00:00 AM	actual site observation date	115364	582-TX621-011	NASIS
P		26192-014	116412	4/15/1982 12:00:00 AM	actual site observation date	115510	582-TX621-014	NASIS
P		26192-017	116488	4/15/1982 12:00:00 AM	actual site observation date	115583	582-TX621-017	NASIS
P		26192-018	116489	4/15/1982 12:00:00 AM	actual site observation date	115584	582-TX621-018	NASIS
P		26192-019	116490	4/15/1982 12:00:00 AM	actual site observation date	115585	582-TX621-019	NASIS
		92KS129041	21636	2/5/1992 12:00:00 AM	actual site observation date	21581	92KS129041	Converted from PDP 3.x
		99KS151216	31949	7/27/1999 12:00:00 AM	actual site observation date	31896	99KS151216	Converted from PDP 3.x
		99KS151225	31958	7/28/1999 12:00:00 AM	actual site observation date	31905	99KS151225	Converted from PDP 3.x
		99KS151498	32230	10/13/1999 12:00:00 AM	actual site observation date	32177	99KS151498	Converted from PDP 3.x
		04KS131100	153720	6/24/2004 12:00:00 AM	actual site observation date	152279	04KS131100	NASIS
P		04KS131100	200527	6/24/2004 12:00:00 AM	actual site observation date	198556	04KS131100	NASIS

2. The Pedon table contains information collected at the time a soil profile description is made. It has data that relates to the profile as a whole. The first few columns in the Pedon table contains the lineage "link" to the Site and Site Observation tables. In NASIS 6.0, a Pedon is linked to the Site table through the Site Observation table. Scroll to the right and view the remaining columns found in the Pedon table.

Pedon						
		Descriptor's Name	Soil Name As Sampled ^	Correlated Soil Name ^	Taxon Kind	Pedon Type
P		Rex Cochran and Paul Finnell	Agust-like			within range of map unit
P		Rex Cochran and Paul Finnell	Agust-like			within range of map unit
P		Rex Cochran and Paul Finnell	Agust-like			within range of map unit
P		Rex Cochran and Paul Finnell	Agust-like			within range of map unit
P		Rex Cochran and Paul Finnell	Agust-like			within range of map unit
		John Warner	Atchison			field note
		John C. Warner	Attica		series	within range of series
		John C. Warner	Attica		series	within range of series
		John C. Warner	Attica		series	within range of series
		J.C. Remley, J. Warner, J. Anderson, W. Wehmuller	Baileyville		series	within range of series
P		J.C. Remley, J. Warner, J. Anderson, W. Wehmuller	Baileyville		series	within range of series

3. Use the View Information menu option or toolbar button to examine the information on each table or use the Right click menu on each column to View Information on each column in these tables.
4. After examining the **Pedon** table, click the **plus sign (+)** button to open the Pedon child tables. The child tables open to the Pedon Horizon table.

NASIS User Guide

Descriptor's Name	Soil Name As Sampled	Correlated Soil Name	Taxon Kind	Pedon Type	Pedon Purpose

- The Pedon Horizon table lists the horizons for each pedon. Consider the population of horizon thickness: if the horizon thickness is greater than zero (low=5, RV=8, high=12), the horizon exists throughout the exposure of the profile. If the horizon thickness includes zero (low=0, RV=1, high=3), the horizon may exist in some places, but may not exist in other places.
- Horizons that have two distinct parts, such as E/B or E & Bt, are recorded twice. The characteristics of the first part are populated in one record, then again in a second row, using the same horization, depths and thicknesses, the characteristics of the second part are populated. This is the only location in which this population rule is used – it is NOT used in the Horizon table.
- Click through the remaining Pedon child tables and scroll through each table becoming familiar with the columns in each table. In NASIS6, new columns have been placed in the Pedon Horizon table. Use the View Information menu option or toolbar button to examine the information on each table.
- After examining the **Pedon Horizon** table, click the **plus sign (+)** button to open the Pedon Horizon child tables. The child tables open to the Pedon Horizon Texture table.

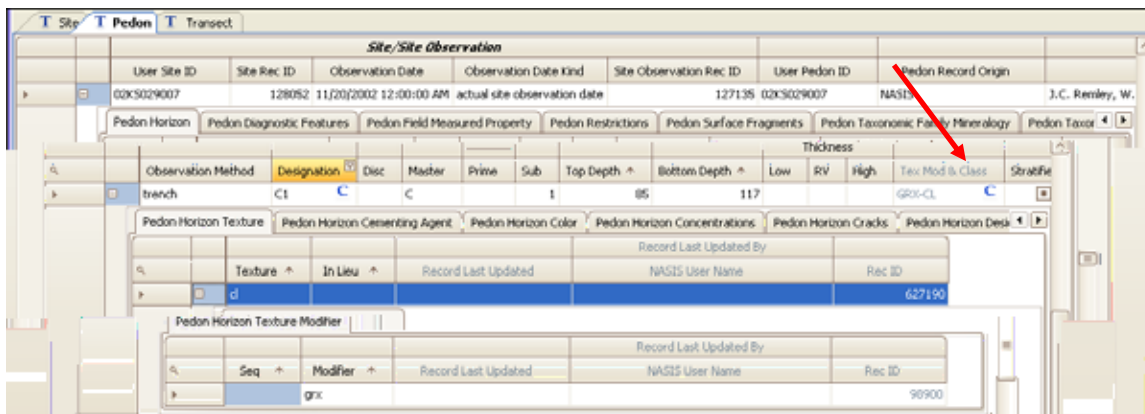
Designation	Disc	Master	Prime	Sub	Top Depth	Bottom Depth	Low	RV	High	Tex Mod & Class	Stratifi
A	C	A			0	7				UPS	C

Texture	In Lieu	Record Last Updated	NASIS User Name	Rec ID
fs				99

Note: The Pedon Horizon Texture table lists the texture or terms used “In lieu” of texture.

NASIS User Guide

- Click through the remaining Pedon Horizon child tables and scroll through each table becoming familiar with the columns in each table. Use the View Information menu option or toolbar button to examine the information on each table or use the Right click menu on each column to View Information on each column in these tables.
- After examining the **Pedon Horizon** child tables, return to the **Pedon Horizon Texture** table and click the **plus sign (+)** button to open the Pedon Horizon Texture child table. The child tables open to the **Pedon Horizon Texture Modifier** table.

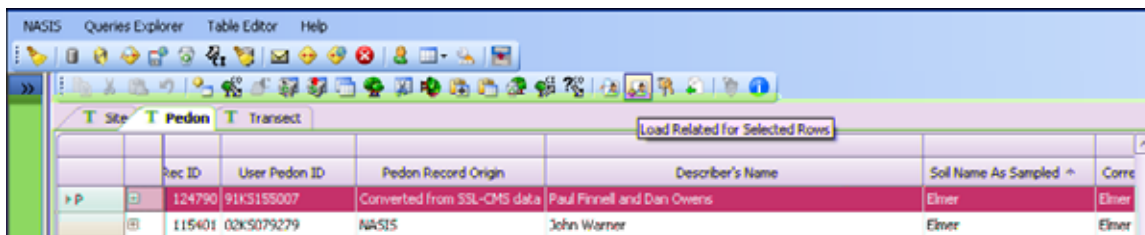


- The **Pedon Horizon Texture Modifier** table is displayed. The texture modifier and class column (Tex Mod & Class) in the Pedon Horizon table (see red arrow) is a calculated field based on the texture term in the Pedon Horizon Texture table and the textural modifier in the Pedon Horizon Texture Modifier table.

Examining the Link between Pedons and Components

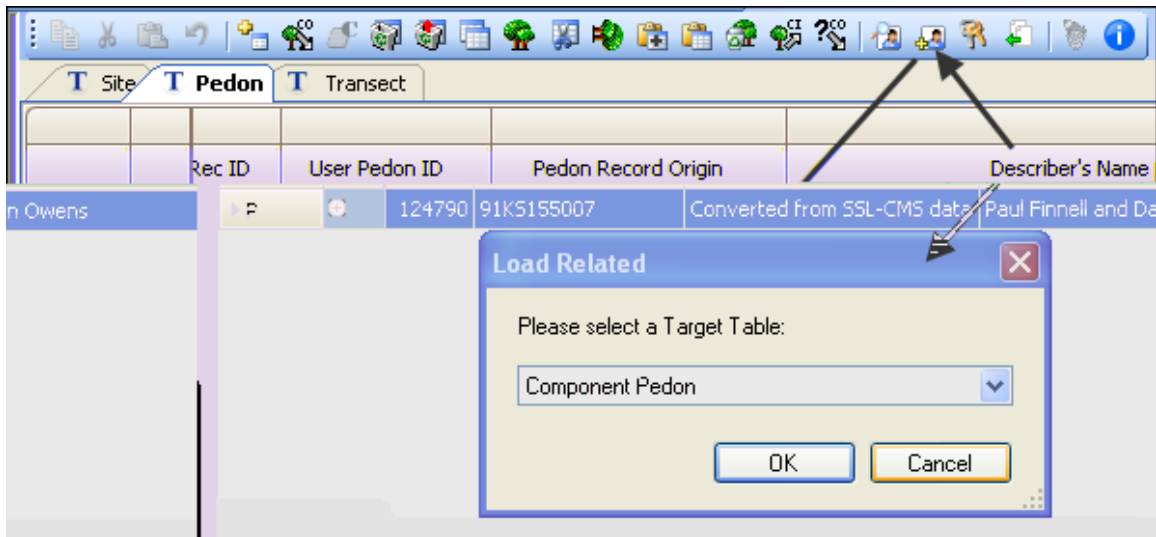
Pedons are to be linked to the component in the Data Mapunit within the map unit in which it is sampled. The following few steps will only work if the pedon is linked to a component and the component is in the local database. In this exercise, this pedon is linked to a Component and this is shown to explain the linking process.

- Return to the **Pedon** table.



NASIS User Guide

2. On the **Table Editor** menu or the **Editor Toolbar**, choose **Load Related for Selected Rows** and then choose **Component Pedon**. The Status panel will identify the number of rows loaded.



- On the **Table Explorer**, open the **Component** table. Then open the child tables, click on the right arrow to find the **Component Pedon** table. The component that is linked to this pedon is displayed.

[illegible]

4. The **Pedon** is linked to the **Component** via the **Component Pedon** table.

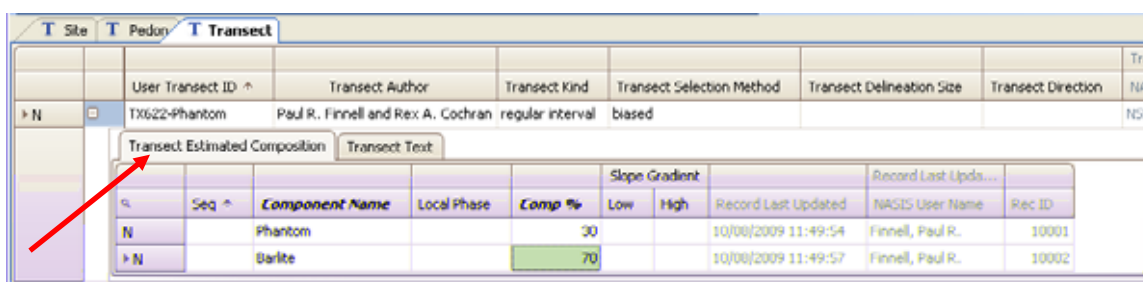
Note: The Pedon is linked to the Component in which the pedon was described. This pedon and any others described and linked to a component are used as documentation to support the aggregation of the Component properties for the given map unit.

Examining the Transect tables

An overall description of the transect grouping (kind, selection method, delineation size, direction) is defined in the transect table. The Transect text table allows entry of related notes. Transects are recorded in the transect tables, and the individual transect stops are recorded in the pedon table.

If Pedons are entered as part of a Transect, then it is best to enter the information in the Transect table before entering pedons, then move to the Pedon table and enter the pedons in order to identify the stop number and the interval. Each pedon will require the Transect information entered.

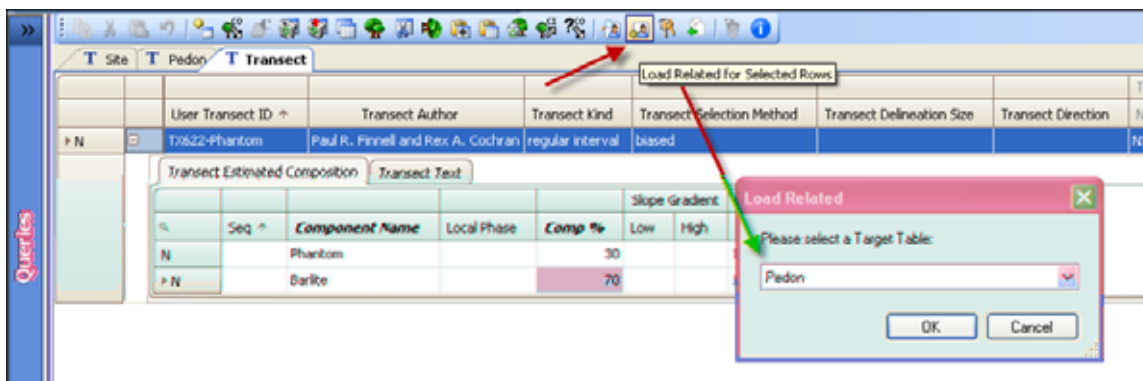
1. Open the **Transect** table to view the transects and to open the child tables. Notice new child tables named "**Transect Estimated Composition**" and "**Transect Text**".



The screenshot shows the NASIS database interface with the **Transect** table selected. Below the main table, two child tables are visible: **Transect Estimated Composition** and **Transect Text**. A red arrow points to the **Transect Estimated Composition** table.

Seq	Component Name	Local Phase	Comp %	Slope Gradient	Record Last Updated	NASIS User Name	Rec ID
N	Phantom		30		10/00/2009 11:49:54	Finnell, Paul R.	10001
N	Barite		70		10/00/2009 11:49:57	Finnell, Paul R.	10002

2. Use the View Information menu option or toolbar button to examine the information on each table or use the Right click menu on each column to View Information on each column in these tables.
3. Assuming the Pedon data exists in the Local Database, with the cursor positioned in the **Transect** table, click on the **Load Related for Selected Rows** icon on the Editor toolbar or menu.
4. Choose **Pedon** from the choice list.



NASIS User Guide

5. Move to the Pedon table.

T Site T Pedon T Transect								
Transect								
		User Transect ID ▾	Transect Author	Transect Rec ID	Transect Stop Nu... ⬆	Transect Interval	User Pedon ID	Soil Name As Sampled
P	⊞	TX622-Phantom	Paul R. Finnell and Rex A. Cochran	70259	1	161.0	S82-TX622-001	Phantom
P	⊞	TX622-Phantom	Paul R. Finnell and Rex A. Cochran	70259	2	161.0	S82-TX622-002	Phantom-like
P	⊞	TX622-Phantom	Paul R. Finnell and Rex A. Cochran	70259	3	161.0	S82-TX622-003	Phantom
P	⊞	TX622-Phantom	Paul R. Finnell and Rex A. Cochran	70259	4	161.0	S82-TX622-004	Barlite
P	⊞	TX622-Phantom	Paul R. Finnell and Rex A. Cochran	70259	5	161.0	S82-TX622-005	Barlite
P	⊞	TX622-Phantom	Paul R. Finnell and Rex A. Cochran	70259	6	161.0	S82-TX622-006	Barlite
P	⊞	TX622-Phantom	Paul R. Finnell and Rex A. Cochran	70259	7	161.0	S82-TX622-007	Barlite
P	⊞	TX622-Phantom	Paul R. Finnell and Rex A. Cochran	70259	8	161.0	S82-TX622-008	Barlite
P	⊞	TX622-Phantom	Paul R. Finnell and Rex A. Cochran	70259	9	161.0	S82-TX622-009	Barlite
P	⊞	TX622-Phantom	Paul R. Finnell and Rex A. Cochran	70259	10	161.0	S82-TX622-010	Barlite

Note: This view of the Pedon table has been modified. The Transect band was moved to the left side of the table. The Transect band includes the 3 columns from the Transect table, identifying the User Transect ID, Authors and Transect RecID. In addition, the Transect Stop Number and the Transect Interval found in the Pedon table were moved to columns in association with the Soil Name.

Examining the Site Association tables

The **Site Association** table is used to record some natural or artificial grouping of sites. Types of groupings may be created as needed by the user. The **Site Association Site** table records the identifier of a site that is a member of a particular site association. A site association may contain any number of sites, and a site may be a member of more than one site association.

To explain the use of the Site Association object:

1. In the Queries Explorer, choose the National query “*Site Association by Site Association ID*” and “Run Against National Database”. Choose the following parameters:

Selections for Running Query Site Association by Site Association ID

Target Tables:

- ☒ Site Association
- ☐ Site
- ☐ Pedon

User Site Association ID:

2. The Local Database Setup will appear; change to the Site Association tab:

Local Database

Run queries against the national database to select more data.

Location	User Site Association ID	NASIS Site Name	NASIS Group Name	Object Last Updated
National	PRF Irrigation Study	MLRA05_Office	Kansas Pedons	07/13/2004 06:20:43
National	PRF Irrigation Study Pits	MLRA05_Office	Kansas Pedons	07/13/2004 06:20:43
National	WW MMA Irrigation Project	MLRA09_Office	Woodward, OK M550 - PEDON	02/29/2008 00:43:03

3. Choose “Accept” then run the query a on the Local Database to load into the selected set using the following parameters.

Selections for Running Query Site Association by Site Association ID

Target Tables:

- ☒ Site Association
- ☒ Site
- ☒ Pedon
- ☐ Site Association Site
- ☐ Site Observation

User Site Association ID:

☐

NASIS User Guide

- From the Table Explorer panel, choose the “**Site Association**” then open the child table to view the **Site Association Site** table:

The screenshot shows the NASIS software interface. At the top, there are tabs for 'Site', 'Pedon', 'Transect', and 'Site Association'. The 'Site Association' tab is selected. Below the tabs, there is a table with columns: 'Site Association ...', 'NASIS Group', 'Object Last Upda...', and 'Rec'. The first row of data shows 'PRF Irrigation Study', 'MLRA05_Office', 'Kansas Pedons', '07/13/2004 06:20:43', 'Wehmue... Bill', and 'NAS'. Below this table, there is a section for 'Site Association Site' and 'Site Association Text'. The 'Site Association Site' section contains a table with columns: 'Associated Site User Site ID', 'Associated Site Rec ID', 'Record Last Updated', 'NASIS User Name', and 'Rec ID'. The data rows show various site IDs and their corresponding record IDs and user names. At the bottom of the interface, there is a status bar with the same information as the top table: 'PRF Irrigation Study Pits', 'MLRA05_Office', 'Kansas Pedons', '07/13/2004 06:20:43', 'Wehmue... Bill', and 'NAS'.

Site Association ...	NASIS Group	Object Last Upda...	Rec
User Site Association ID ↑	NASIS Site Name	NASIS Group Name	Object Last Updated
PRF Irrigation Study	MLRA05_Office	Kansas Pedons	07/13/2004 06:20:43

Associated Site User Site ID ↑	Associated Site Rec ID ↑	Record Last Updated	NASIS User Name	Rec ID
500KS055001-pit	27144			52616
500KS055006-pit	27145			52621
500KS055005	27146			52620
500KS055004	27147			52619
500KS055003	27148			52618
500KS055002	27149			52617
500KS055010	27150			52625
500KS055009	27151			52624
500KS055008	27152			52623
500KS055007	27153			52622
500KS193001-pit	27154			52646
500KS081001-pit	27159			52636
500KS081002	27160			52637

This example presents one method in using the Site Association table to group Sites within a similar management project. This particular Site Association groups those pedons that were collected during the study of the influence of irrigation on soil development. Using a Site Association manages all the Sites for quick access.

Process Steps for entering Point data

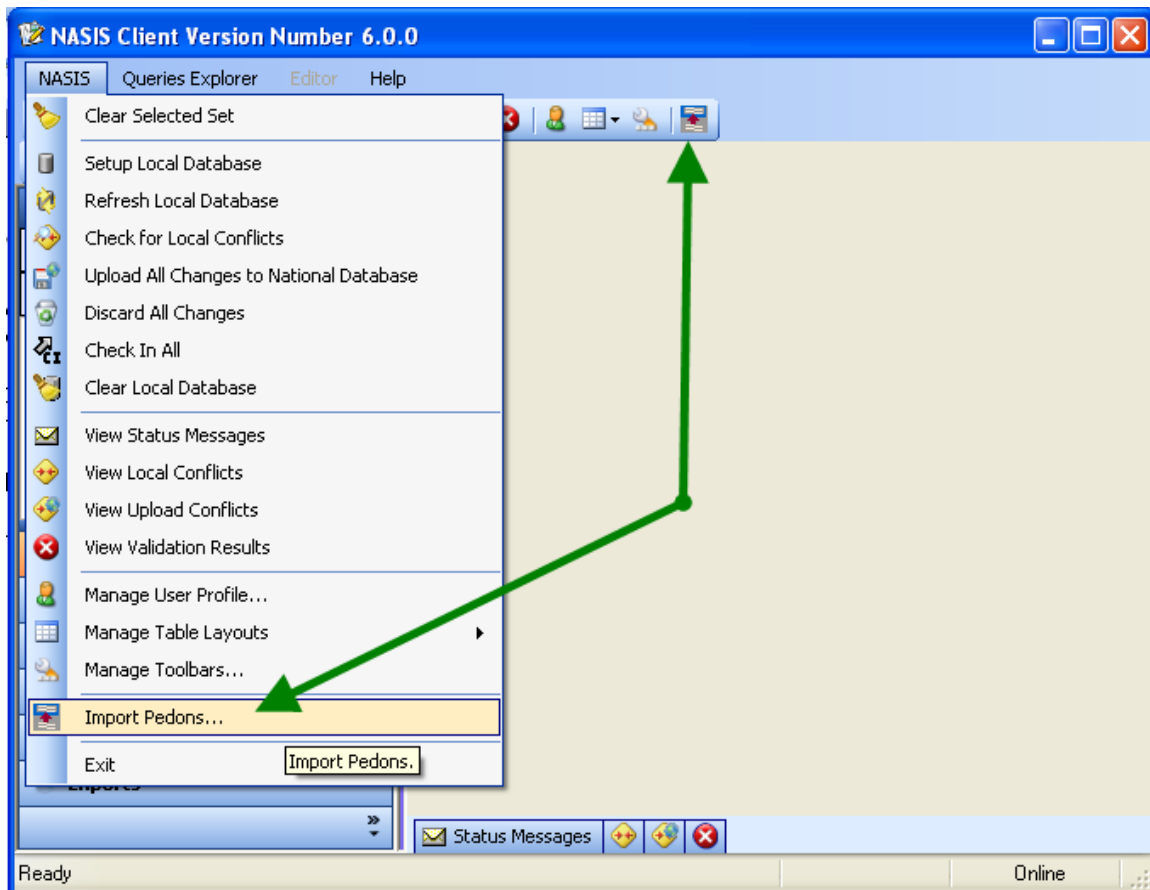
- Open and populate a row in the Site table
- Open and populate a row in the Site Observation table
- Open a row in the Pedon table and use the choice list to link it to the Site and Site Observation that was created in steps 1 and 2
- Populate the Pedon table
- Open and populate the Pedon Horizon table – enter all horizons before leaving the table
- Open the first Pedon Horizon child table and populate that table for all horizons

If the pedon is part of a Transect, then first enter a row in the Transect table and populate the transect information in order to facilitate the linkage between the Pedon and Transect.

If the point data is part of a Site Association, then create the Site Association after the Sites are complete. Either copy all sites and paste into the Site Association Site table or populate the Sites using the choice list found in the Site Association Site table.

Chapter 10: Pedon Import

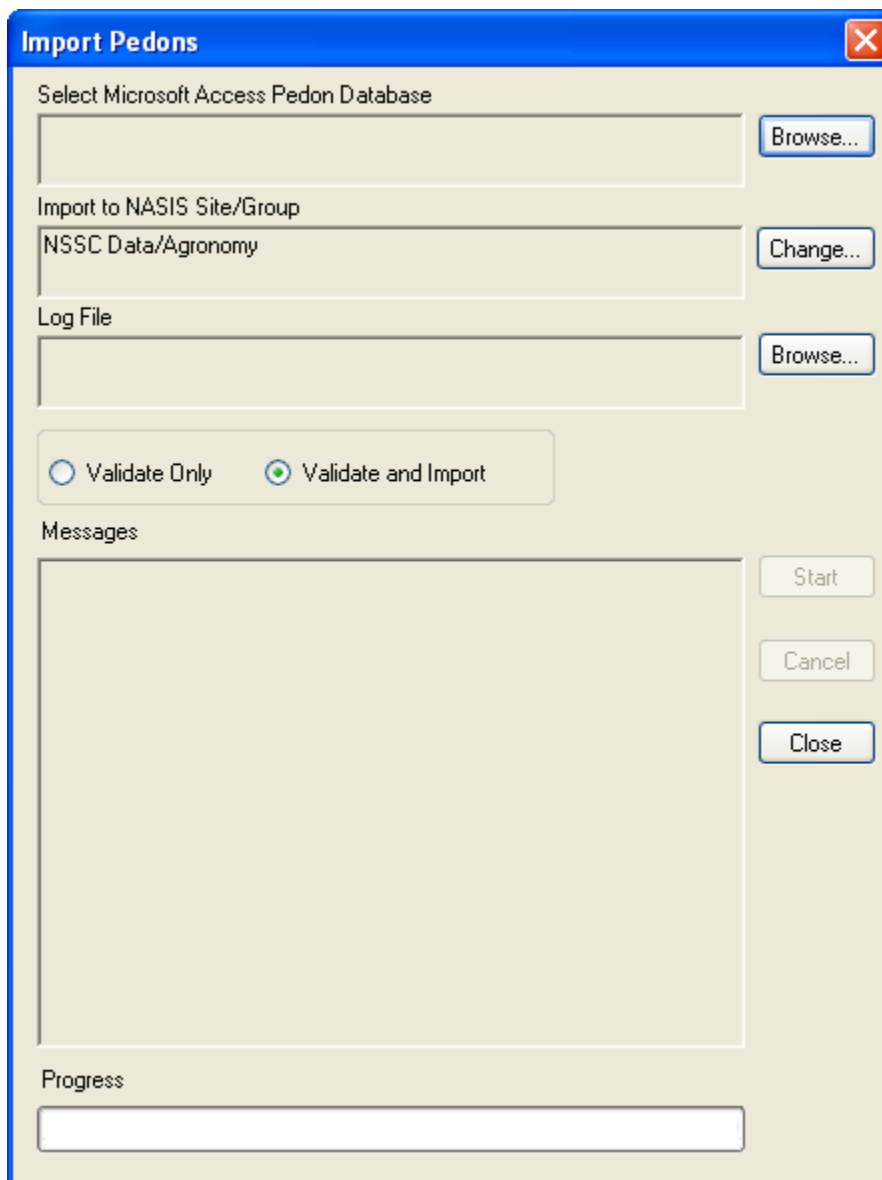
Chapter 9 introduced the database objects and tables associated with collecting and managing point data. The columns can be modified to fit the needs of the user and data can be entered directly into the Site, Pedon, Transect and Site Association tables. However, PedonPC remains viable software for Point data entry. To facilitate the capture of all pedon data into the corporate database, an import routine has been built into the NASIS software to import the PedonPC pedon.mdb file into the NASIS local database. The Pedon Import routine is implemented from the NASIS menu or the NASIS Toolbar.



Choosing either option will open the Pedon Import parameter screen:

NASIS User Guide

The Pedon Import screen is used to locate the file to be imported and to assign the NASIS Site and Group for data ownership.



The **Import Pedons** dialog box is used to configure the import process. It features a blue title bar with a close button. The main area is divided into several sections: a text box for the Microsoft Access Pedon Database with a **Browse...** button; a text box for the NASIS Site/Group (currently showing "NSSC Data/Agronomy") with a **Change...** button; a text box for the Log File with a **Browse...** button; a radio button group with **Validate Only** and **Validate and Import** (the latter is selected); a large **Messages** text area; and a **Progress** bar. On the right side, there are **Start**, **Cancel**, and **Close** buttons.

Import Pedons

Select Microsoft Access Pedon Database

Browse...

Import to NASIS Site/Group

NSSC Data/Agronomy

Change...

Log File

Browse...

☐ Validate Only ☒ Validate and Import

Messages

Start

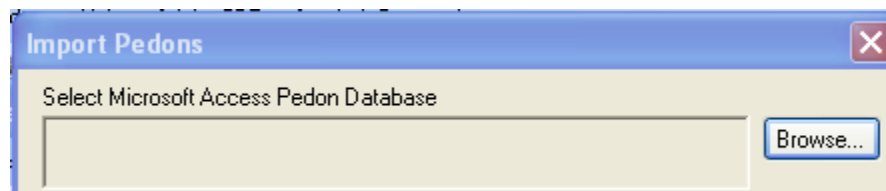
Cancel

Close

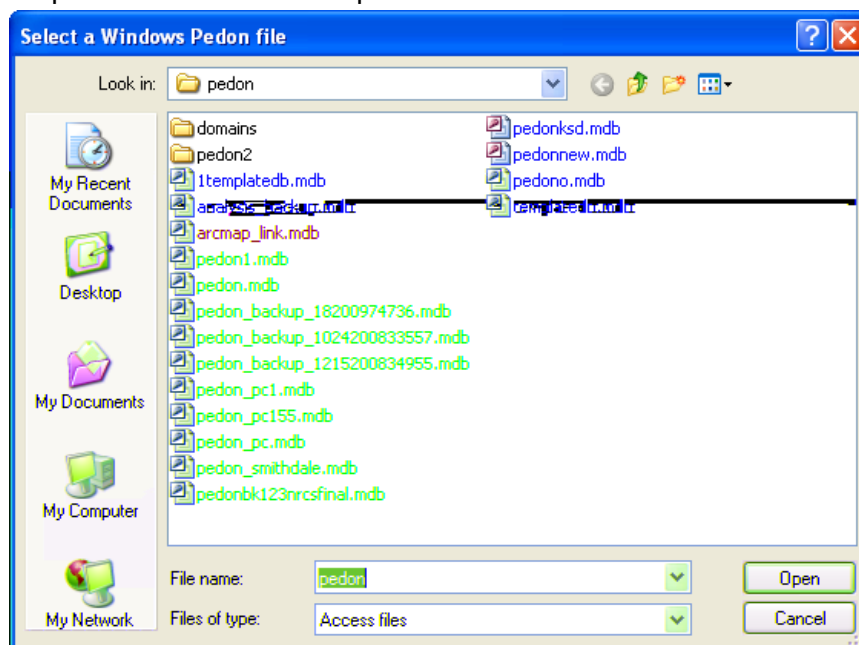
Progress

NASIS User Guide

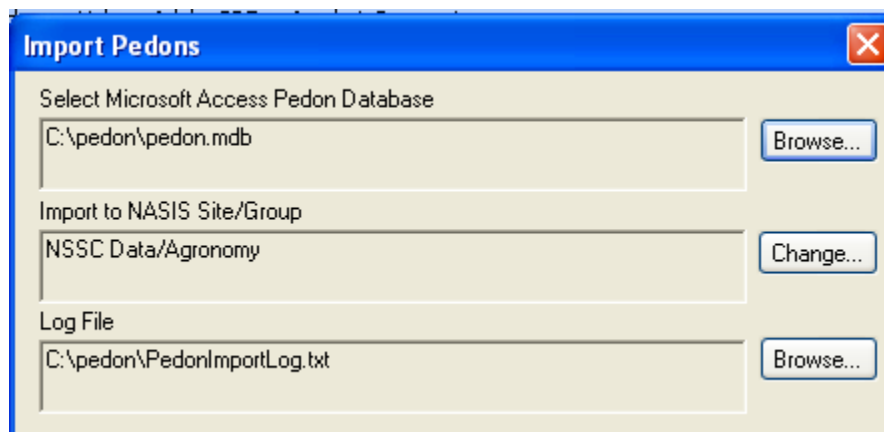
Choosing the Browse button will open the Windows Explorer to the C:\pedon folder. This folder is the default folder for the PedonPC program.



Select the pedon.mdb file to be imported:

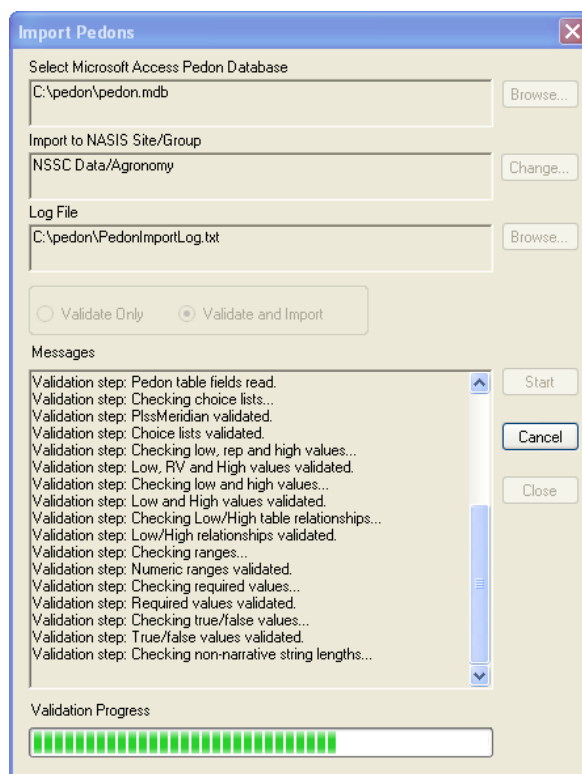


The option is available to change the assigned permissions of imported data. And, the option is available to change the location of the log file that is generated during the validation and import process.

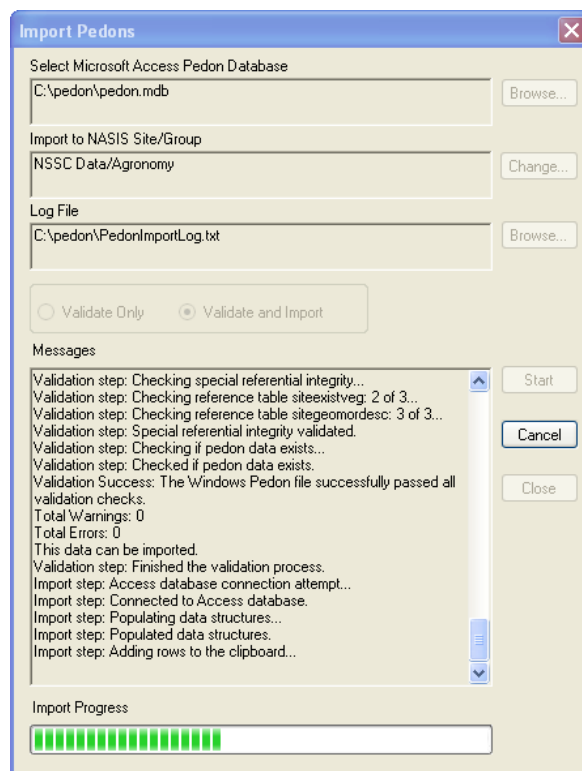


NASIS User Guide

The import process begins with validating the data integrity of the pedon.mdb file:

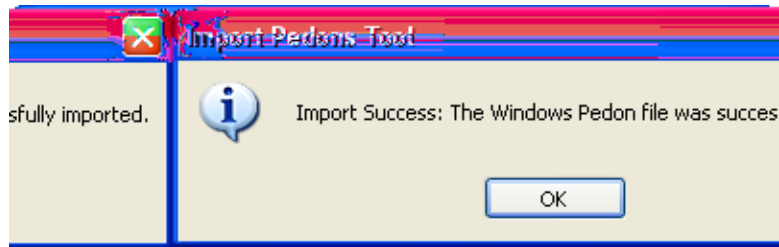


After the validation process is complete, the import routine begins:

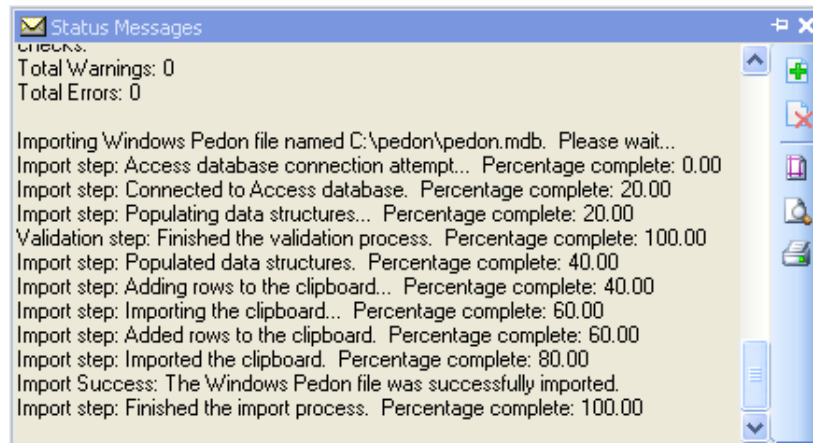


NASIS User Guide

Upon completion, a dialog box appears if the import was successful:

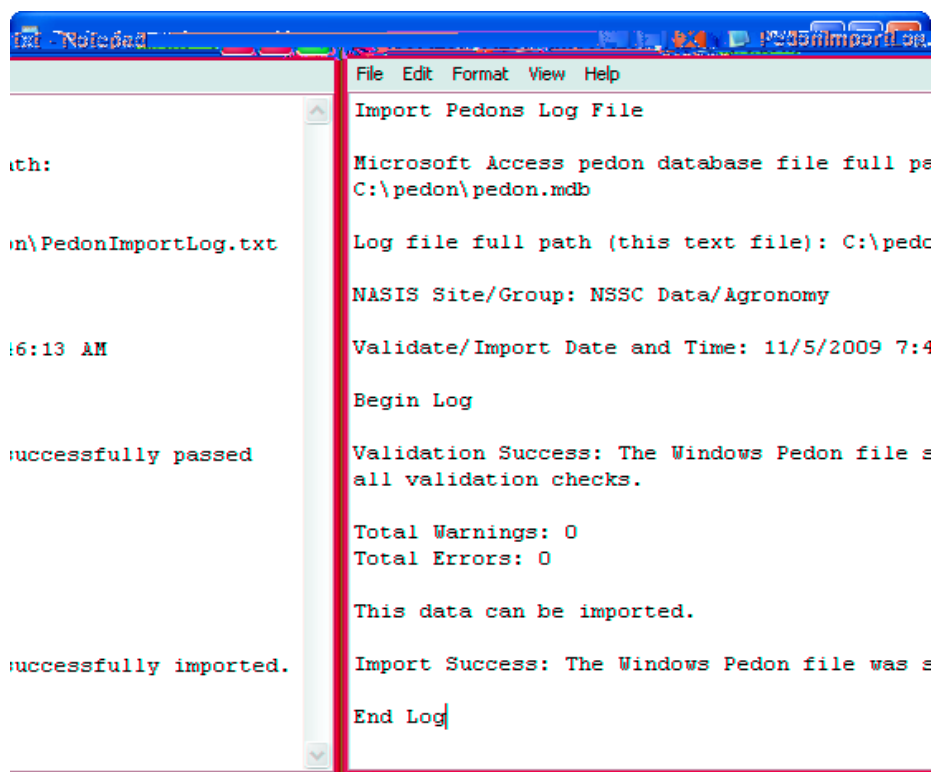


The log file is created in the Message Panel in NASIS:

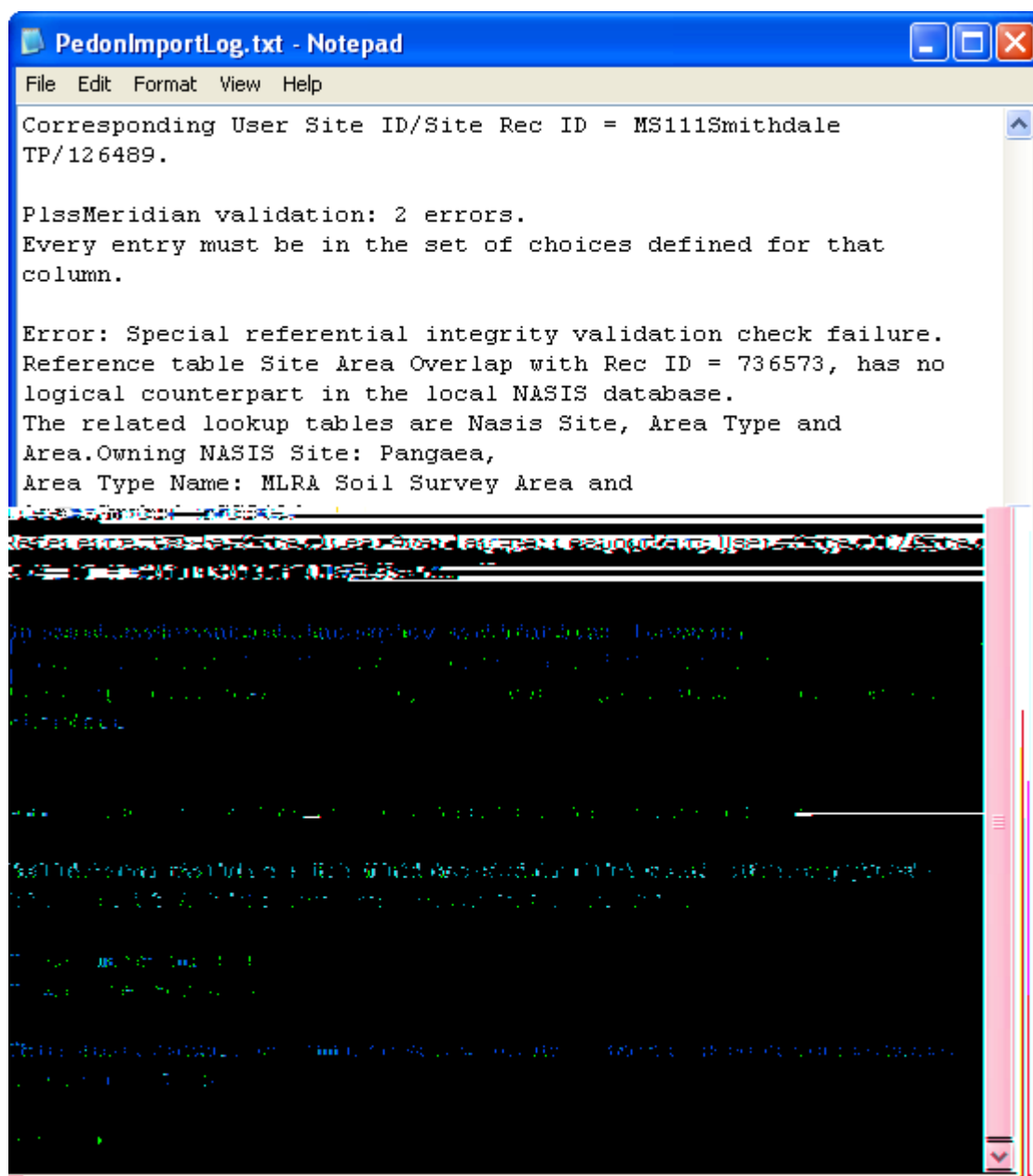


And the log file is stored as a text file:

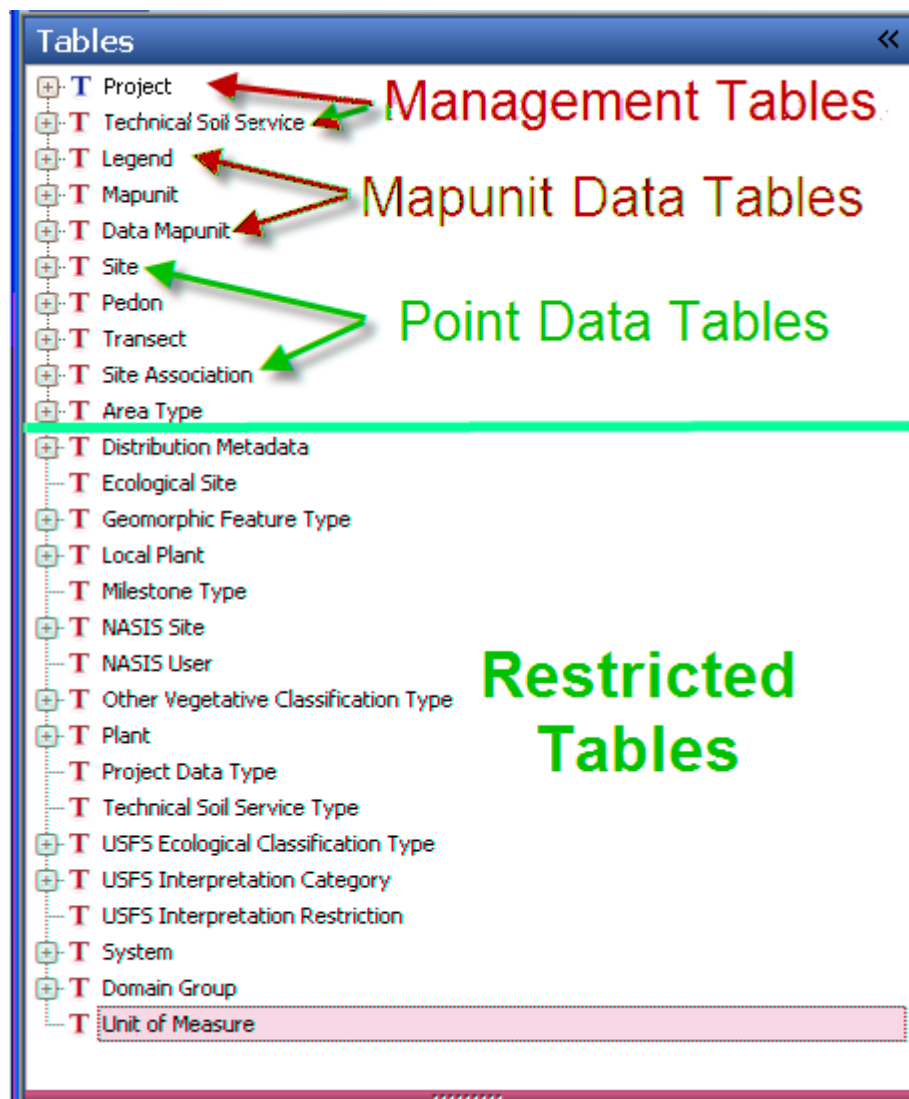
NASIS User Guide



If the import fails, the log file will appear on screen providing details of the failure. The data must be corrected prior to importing.



Chapter 11: Examining Other NASIS Tables



Examining Management, Mapunit and Point Tables

Chapters 7, 8, and 9 all referred to the Project, Mapunit and Point data tables in NASIS. There are many more tables used to support the database. These tables are referred to as "Restricted Tables" only because they are commonly accessed by very few NASIS users. The data for these tables are downloaded during the initiation of the database and subsequent refreshes.

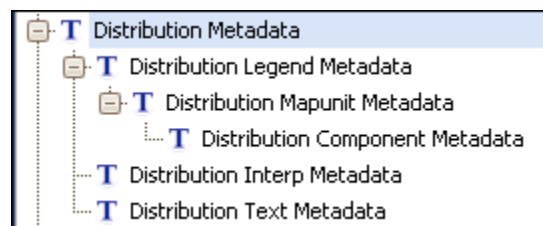
Examining Restricted Tables

This lesson repeats the process of locating tables in different objects that were addressed in Chapter 3. Specifically, this chapter discusses tables that contain information related to some map unit tables, but which are owned by groups such as “Pangaea” or “Flora” and are not edited by most users. Refer to Database Security in Chapter 1 for more information on object ownership and access.

Examining the Distribution Metadata Tables

The Distribution Metadata table records the information associated with the exported data from NASIS. Export selection criterion is stored in the Distribution Metadata records. The stored data include the legend, the selected map units, and the selected components of those map units. This table records the criteria used for selecting map units and included components, the interpretations, the text fields, the name of the NASIS user who initiated the export, the time when that request was made, and when that request was ultimately processed.

This object consists of six tables used to capture the criteria and data the user selected when exporting data from NASIS. This table is populated when an export is run. A national query, run against local database, is used to load the records associated with an export. These tables are further explained in Chapter 17 – Exports Explorer.



Examining the Ecological Site Tables

The Ecological Site table records the official list of range and forest ecological sites maintained by NRCS and described in the Ecological Site Information System (ESIS). Further information on ESIS can be found at its web site. This table contains several columns worth of information used to categorize and identify the various ecological sites. The complete ecological site characterization resides in the ESIS database. The official list of ecological sites is maintained in ESIS. This table is used to build the choice list features in the Component Ecological Site table.

NASIS User Guide

T Ecological Site						
	Ecological Site ID	Ecological Site Name	Ecological Site Origin	Ecological Site Type ^	Ecological Site MLRA ^	Ecological Site LRU ^
P	F271XZ011PR	Calamovilfa longifolia/Lechea legge...	esd - current	F	271X	Z
P	F271XZ019PR	Acacia farnesiana-Acacia tortuosa/...	esd - current	F	271X	Z
P	F271XZ026PR	Calotropis procera-Pilosocereus ro...	esd - current	F	271X	Z
P	F271XZ034PR	Calotropis procera-Leucaena leuco...	esd - current	F	271X	Z
P	F272XZ015PR	Cocos nucifera/Coccoloba uvifera/...	esd - current	F	272X	Z
P	F272XZ020PR	Suaeda maritima/Suaeda maritima/...	esd - current	F	272X	Z
P	F272XZ023PR	Axonopus compressus-Cyperus pla...	esd - current	F	272X	Z
P	F272XZ024PR	Casearia sylvestris-Ficus citrifolia/...	esd - current	F	272X	Z
P	F273XZ012PR	Acacia farnesiana-Bursera simarub...	esd - current	F	273X	Z
P	F273XZ030PR	Andira inermis-Guazuma ulmifolia/...	esd - current	F	273X	Z
P	F273XZ032PR	Calotropis procera-Thespesia popu...	esd - current	F	273X	Z
P	R001XF603WA	BOG OR FEN	esd - current	R	001X	F
P	R001XF703WA	HIGH SALT MARSH	esd - current	R	001X	F
P	R001XF713WA	LOW SALT MARSH	esd - current	R	001X	F
P	R001XF723WA	SALT WATER BLUFF	esd - current	R	001X	F
P	R001XF733WA	COASTAL GRASSLAND	esd - current	R	001X	F
P	R001XY200AL	test	esd - current	R	001X	Y
P	R002XF503WA	XERIC PRAIRIE - HIGH PRECIPITAT...	esd - current	R	002X	F
P	R002XF603WA	BOG OR FEN	esd - current	R	002X	F
P	R002XN202WA	PRAIRIE BALD	esd - current	R	002X	N
P	R002XN502WA	XERIC PRAIRIE	esd - current	R	002X	N

Continuing the table,

T Ecological Site							
	Ecological Site ID	Ecological Site Name	Ecological Site Number ^	Ecological Site S... ^	Ecological Site Primar...	Ecological Site Sec...	Ecological Site Tertiary N...
P	F271XZ011PR	Calamovilfa longifolia/Lechea legges...	11	PR	Arid Shallow Hills	(33 inches)	
P	F271XZ019PR	Acacia farnesiana-Acacia tortuosa/...	19	PR	Dry Hilly	(38 inches)	
P	F271XZ026PR	Calotropis procera-Pilosocereus ro...	26	PR	Limestone Coastal Hill	(33 inches)	
P	F271XZ034PR	Calotropis procera-Leucaena leuco...	34	PR	Semiarid Hills	(42 inches)	
P	F272XZ015PR	Cocos nucifera/Coccoloba uvifera/...	15	PR	Coastal Dunes	(55 inches)	
P	F272XZ020PR	Suaeda maritima/Suaeda maritima/...	20	PR	Dry Sandyland	(33 inches)	
P	F272XZ023PR	Axonopus compressus-Cyperus pla...	23	PR	Flooded Lowland	(54 inches)	
P	F272XZ024PR	Casearia sylvestris-Ficus citrifolia/...	24	PR	Humid Coastal Hills	(54 inches)	
P	F273XZ012PR	Acacia farnesiana-Bursera simarub...	12	PR	Arid Southwestern	(30 inches)	
P	F273XZ030PR	Andira inermis-Guazuma ulmifolia/...	30	PR	Saline Lowland	(30 to 45 inches)	
P	F273XZ032PR	Calotropis procera-Thespesia popu...	32	PR	Sandy Plain	(20 to 45 inches)	
P	R001XF603WA	BOG OR FEN	603	WA	BOG OR FEN		
P	R001XF703WA	HIGH SALT MARSH	703	WA	HIGH SALT MARSH		
P	R001XF713WA	LOW SALT MARSH	713	WA	LOW SALT MARSH		
P	R001XF723WA	SALT WATER BLUFF	723	WA	SALT WATER BLUFF		
P	R001XF733WA	COASTAL GRASSLAND	733	WA	COASTAL GRASSLAND		
P	R001XY200AL	test	200	AL	test		
P	R002XF503WA	XERIC PRAIRIE - HIGH PRECIPITATI...	503	WA	XERIC PRAIRIE	- HIGH PRECIPITATI...	
P	R002XF603WA	BOG OR FEN	603	WA	BOG OR FEN		
P	R002XN202WA	PRAIRIE BALD	202	WA	PRAIRIE BALD		

NASIS User Guide

And,

T Ecological Site								
	Ecological Site ID	Ecological Site Name	Ecological Site Tree 1	Ecological Site Tree 2	Ecological Site Shrub 1	Ecological Site Shrub 2	Ecological Site Herb 1	Ecological Site Herb 2
P	F271XZ011PR	Calamovilfa longifolia	Calamovilfa longifolia		Lechea leggettii		Bolbitis pergamentacea	
P	F271XZ019PR	Acacia farnesiana	Acacia farnesiana	Acacia tortuosa	Borrchia arborescens	Bucida buceras	Aristida adscensionis	Aristida portoricensis
P	F271XZ026PR	Calotropis procera	Calotropis procera	Pilosocereus royerii	Jacquinia arborea	Lantana involucrata	Aristida adscensionis	Chloris inflata
P	F271XZ034PR	Calotropis procera	Calotropis procera	Leucaena leucocephala	Cordia angustifolia	Crotalaria	Aristida adscensionis	Agave americana
P	F272XZ015PR	Cocos nucifera	Cocos nucifera		Coccoloba uvifera		Canavalia maritima	
P	F272XZ020PR	Suaeda maritima	Suaeda maritima		Suaeda maritima		Carex maritima	
P	F272XZ023PR	Axonopus compressus	Axonopus compressus	Cyperus planifolius	Acisanthera acisanthera		Aeschynomene sensitiva	
P	F272XZ024PR	Casearia sylvestris	Casearia sylvestris	Ficus citrifolia	Eugenia biflora		Bidens cynapiifolia	
P	F273XZ012PR	Acacia farnesiana	Acacia farnesiana	Bursera simaruba	Prosopis juliflora		Lantana involucrata	
P	F273XZ030PR	Andira inermis	Andira inermis	Guazuma ulmifolia	Pithecellobium unguis-cati	Prosopis juliflora	Aeschynomene americana	Desmanthus virgatus
P	F273XZ032PR	Calotropis procera	Calotropis procera	Thespesia populnea	Coccoloba uvifera		Bidens cynapiifolia	Sesuvium portulacastrum
P	R001XF603WA	BOG OR FEN						
P	R001XF703WA	HIGH SALT MARSH						
P	R001XF713WA	LOW SALT MARSH						
P	R001XF723WA	SALT WATER BAY						
P	R001XF733WA	COASTAL GRASSLAND						
P	R001XY200AL	test						
P	R002XF503WA	XERIC PRAIRIE						
P	R002XF603WA	BOG OR FEN						
P	R002XN202WA	PRAIRIE BALD						

Examining the Geomorphic Feature Type Tables

NASIS stores component landform, landscape, microfeatures, and anthropogenic features used by choice lists in the aggregated and point data in the Geomorphic Feature Type tables. These objects are owned by the NSSC Pangaea site and the Geomorphic staff group in Lincoln.

T Geomorphic Feature Type						
		Feature Type ↑	Description	Obsolete?	Field Code	Notes
▶	+	Anthropogenic Feature	An artificial feature on the land sur...	<input type="checkbox"/>	AF	
	+	Landform	Any physical, recognizable form or ...	<input type="checkbox"/>	LF	6/2008 - de...
	+	Landscape	A broad or unique land area compri...	<input type="checkbox"/>	LS	6/2008 - de...
	+	Microfeature	Small, local, natural forms (feature...	<input type="checkbox"/>	MF	

1. On the **Tables Explorer**, choose and open **Geomorphic Feature Type**. The table is empty.
2. To load data, open the **Query Explorer** and from the National query list, choose “**Geomorphic Features by feature name and type**” and “Run Against Local Database”. Use an asterisk in the parameters to load all four Feature Types.

T Geomorphic Feature Type						
		Feature Type ↑	Description	Obsolete?	Field Code	Notes
	+	Anthropogenic Feature	An artificial feature on the land sur...	<input type="checkbox"/>	AF	
	+	Landform	Any physical, recognizable form or ...	<input type="checkbox"/>	LF	6/2008 - de...
Geomorphic Feature						
		Feature Name (singular) ↑	Feature Name (plural)	Description	Obsolete?	Field Code
		beach terrace	beach terraces	(a) A landform that consists of a wave-cut scar ...	<input type="checkbox"/>	BT
		bench	benches	A platform-like, nearly level to gently inclined e...	<input checked="" type="checkbox"/>	
		berm	berms	(beach) A low, impermanent, nearly horizontal ...	<input type="checkbox"/>	BM
		beveled base	beveled bases	The lower portion of a canyon wall or escarpme...	<input type="checkbox"/>	
		blind valley	blind valleys	A valley, commonly in karst, that ends abruptly...	<input type="checkbox"/>	VB
		block field	block fields	A thin accumulation of stone blocks, typically a...	<input type="checkbox"/>	BW
		block stream	block streams	An accumulation of boulders or angular blocks, ...	<input type="checkbox"/>	BS
		blowout	blowouts	A saucer-, cup-, or trough-shaped hollow or de...	<input type="checkbox"/>	BY
		bluff	bluffs	(a) A high bank or bold headland, with a break ...	<input type="checkbox"/>	BU
		bog	bogs	Waterlogged, spongy ground, consisting prima...	<input type="checkbox"/>	BO

3. The Geomorphic Features table contains all available features for use in the Pedon and the Component tables. This table also indicates which feature names are obsolete. Notice that “bench” is an obsolete feature. That means bench will not appear on the Feature Name choice list for landform in the Component Geomorphic Description table. Data such as these should be updated with new names or codes. Although NASIS still stores many old data element names and codes, their use is not encouraged.

Examining the Plants Table

Local Plants table

The official national plant list is in excess of 80,000 records. To manage its use efficiently, NASIS provides a method to build a subset of the entire official plant list. The subset is essentially a plant lookup table referred to as the *Local Plant* table. The local plants are owned objects, just like legends and data mapunits. The local plant object is owned by the Local Plant Administration group, and NASIS users within that group can add, modify, and delete records in these tables.

1. On the **Table Explorer** panel, choose and open **Local Plant**. The table is empty.
2. From the Queries Explorer panel, choose the National query named **"Plant (Local) by plant common name"** and set the **Target Table** to **"Local Plant"**.
3. Plants data is downloaded during the database initialization and when the database is refreshed, therefore the query will be **"Run Against Local Database"**.
4. For the sake of this exercise, set the parameters as **"*grama*"** and an asterisk (*) for NASIS site.

Selections for Running Query Plant (local) by plant common name

Target Tables: ☒ Local Plant ☐ NASIS Site

Common Name: *grama*

NASIS Site Name: *

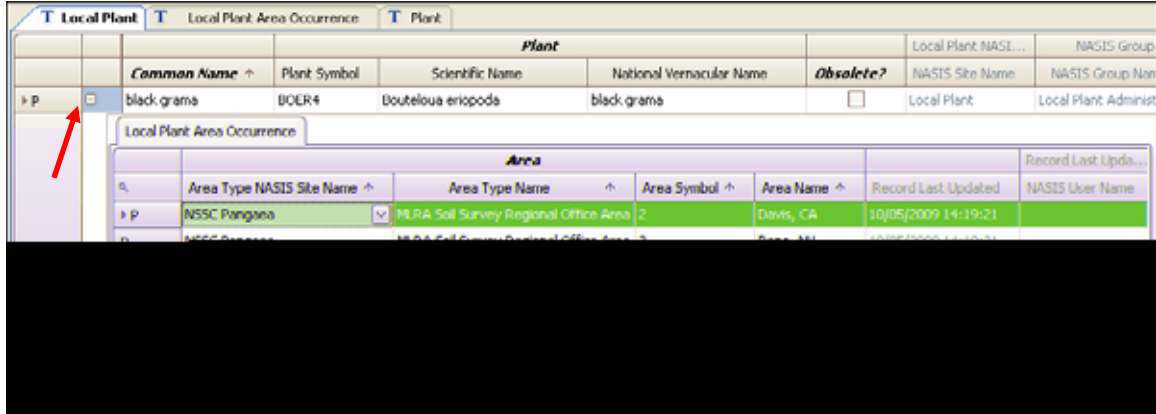
☐ Check Out

5. A message reports that twenty-six rows were added to the Local Plant Table. Click **OK**.

Local Plant							
Plant							
	Common Name	Plant Symbol	Scientific Name	National Vernacular Name	Obsolete?	Local Plant NASIS Site Name	NASIS Group Name
P	black grama	BOBK4	Bouteloua eriopoda	black grama	<input type="checkbox"/>	Local Plant	Local Plant Administ
P	blue grama	BOGR2	Bouteloua gracilis	blue grama	<input type="checkbox"/>	Local Plant	Local Plant Administ
P	chino grama	BOCH4	Bouteloua ramosa	chino grama	<input type="checkbox"/>	Local Plant	Local Plant Administ
P	chino grama	BOBR	Bouteloua brevifolia	gypsum grama	<input type="checkbox"/>	Local Plant	Local Plant Administ
P	eastern grama	TRDA2	Tripsacum dactyloides	eastern grama	<input type="checkbox"/>	Local Plant	Local Plant Administ
P	Fahr grama	CAER2	Cathartus rufus	Fahr grama	<input type="checkbox"/>	Local Plant	Local Plant Administ
P	grama	BOUE	Bouteloua	grama	<input type="checkbox"/>	Local Plant	Local Plant Administ
P	gyp grama	BOBR	Bouteloua brevifolia	gypsum grama	<input type="checkbox"/>	Local Plant	Local Plant Administ
P	gypsum grama	BOBR	Bouteloua brevifolia	gypsum grama	<input type="checkbox"/>	Local Plant	Local Plant Administ
P	hairy grama	BOH2	Bouteloua hirsuta	hairy grama	<input type="checkbox"/>	Local Plant	Local Plant Administ
P	oneflower grama	BOCH	Bouteloua uniflora	oneflower grama	<input type="checkbox"/>	Local Plant	Local Plant Administ
P	needle grama	BOAR	Bouteloua aristoides	needle grama	<input type="checkbox"/>	Local Plant	Local Plant Administ
P	purple grama	BOAR	Bouteloua radicata	purple grama	<input type="checkbox"/>	Local Plant	Local Plant Administ
P	red grama	BOAR	Bouteloua trifida	red grama	<input type="checkbox"/>	Local Plant	Local Plant Administ
P	Rothrock grama	BOAR	Bouteloua barbata var. rothrockii	Rothrock's grama	<input type="checkbox"/>	Local Plant	Local Plant Administ
P	Rothrock's grama	BOAR	Bouteloua rothrockii	Rothrock's grama	<input type="checkbox"/>	Local Plant	Local Plant Administ
P	side-rots grama	BOCU	Bouteloua curtipendula	side-rots grama	<input type="checkbox"/>	Local Plant	Local Plant Administ
P	side-rots grama	BOCU	Bouteloua curtipendula	side-rots grama	<input type="checkbox"/>	Local Plant	Local Plant Administ

NASIS User Guide

6. The Local Plants table contains only the Common Name. **Notice** the “Plant” lineage band (to the right of “Common Name”) and columns from the National Plants table. The table has been changed from the NASIS 5.4 to the NASIS 6.0 version. The common name is now directly linked to the National plant symbol, scientific name and vernacular name.
7. The first instance is “black grama”. Click on the plus sign on the left to open the Local Plant Area Occurrence table. This new table is used to identify the locations that use the “black grama” plant identified in the Local Plant table.



Local Plant		Local Plant Area Occurrence		Plant			
Common Name	Plant Symbol	Scientific Name	National Vernacular Name	Obsolete?	Local Plant NASIS...	NASIS Group	
black grama	BOER4	Boutelous eriopoda	black grama	<input type="checkbox"/>	Local Plant	Local Plant Administ	

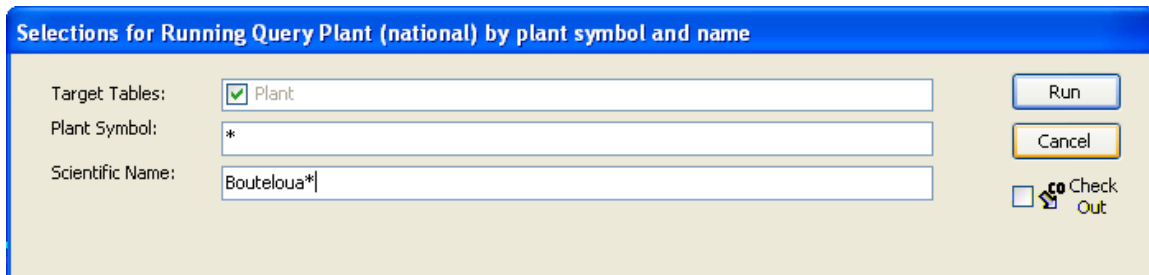
Local Plant Area Occurrence		Area				Record Last Upda...
Area Type NASIS Site Name	Area Type Name	Area Symbol	Area Name	Record Last Updated	NASIS User Name	
NSSC Pangaea	MLRA Soil Survey Regional Office Area	2	Davis, CA	10/05/2009 14:19:21		

National Plant Tables

The national Plant table is used as the official lookups (choice lists). Because the objects are owned by the Flora site, the tables are protected from editing.

Note: Do not attempt to load the entire national plant list. Eighty-thousand records take a very long time to load. Also, if all the local plants are loaded into a selected set, the Save function will take a very long time and will likely fail.

1. On the **Table Explorer** panel, choose and open **Plant**. The table is empty.
2. From the Queries Explorer panel, choose the National query named “**Plant (national) by plant symbol and name**”.
3. Plants data is downloaded during the database initialization and when the database is refreshed, therefore the query will be “**Run Against Local Database**”.
4. For the sake of this exercise, set the parameters as “Bouteloua*” and run the query. It will load 41 rows or data.



Selections for Running Query Plant (national) by plant symbol and name

Target Tables: ☒ Plant

Plant Symbol: *

Scientific Name: Bouteloua*

Run Cancel

☐ Check Out

NASIS User Guide

The Plant table contains the data contained within the national plants database.

There are two child tables. The first is Plant Area Occurrence used to identify the location in which the plant occurs. The second is the Plant synonym table. The Plant Synonym table records the relationship between obsolete plant nomenclature and currently accepted nomenclature.

Plant Symbol	Scientific Name	National Vernacular Name	Plant NASIS Site	NASIS Status	Record Last Updated	Check
P	BOP1	Bouteloua eriopoda	black grama	Plant Administration	10/27/2009 12:00:00	Print
P	BOP2	Bouteloua filiformis		Plant Administration	10/27/2009 12:00:00	Print
P	BOG1	Bouteloua glandulosa		Plant Administration	10/27/2009 12:00:00	Print
P	BOG2	Bouteloua gracilis	blue grama	Plant Administration	10/27/2009 12:00:00	Print
P	BOG3	Bouteloua gracilis var. stricta		Plant Administration	10/27/2009 12:00:00	Print
P	BOH4	Bouteloua heterostegia		Plant Administration	10/27/2009 12:00:00	Print
P	BOH2	Bouteloua hirsuta	hairy grama	Plant Administration	10/27/2009 12:00:00	Print
P	BOHP2	Bouteloua hirsuta var. pectinata		Plant Administration	10/27/2009 12:00:00	Print
P	BOHG	Bouteloua hirsuta var. glandulosa		Plant Administration	10/27/2009 12:00:00	Print
P	BOH1	Bouteloua hirsuta var. hirsuta	hairy grama	Plant Administration	10/27/2009 12:00:00	Print
P	BOHP	Bouteloua hirsuta var. pectinata	tall grama	Plant Administration	10/27/2009 12:00:00	Print
P	BOU	Bouteloua tuncus	terral	Plant Administration	10/27/2009 12:00:00	Print
P	BOKA	Bouteloua hayi	Kay's grama	Plant Administration	10/27/2009 12:00:00	Print
P	BOOL	Bouteloua oligostachya		Plant Administration	10/27/2009 12:00:00	Print
P	BOH2	Bouteloua parryi	Perry's grama	Plant Administration	10/27/2009 12:00:00	Print
P	BORE3	Bouteloua pectinata		Plant Administration	10/27/2009 12:00:00	Print
P	BOHA	Bouteloua radicata	purple grama	Plant Administration	10/27/2009 12:00:00	Print
P	BOHA	Bouteloua ramosa	Ohio grama	Plant Administration	10/27/2009 12:00:00	Print
P	BORE2	Bouteloua repens	slender grama	Plant Administration	10/27/2009 12:00:00	Print

Plant Symbol	Scientific Name	National Vernacular Name	Plant NASIS Site	NASIS Site Name	NASIS Site Address
P	BOP1	Bouteloua eriopoda	black grama		
P	BOG1	Bouteloua glandulosa			
P	BOG2	Bouteloua gracilis	blue grama		
P	BOH4	Bouteloua heterostegia			
P	BOH2	Bouteloua hirsuta	hairy grama		
P	BOHP2	Bouteloua hirsuta var. pectinata			
P	BOHG	Bouteloua hirsuta var. glandulosa			
P	BOH1	Bouteloua hirsuta var. hirsuta	hairy grama		
P	BOHP	Bouteloua hirsuta var. pectinata	tall grama		
P	BOU	Bouteloua tuncus	terral		
P	BOKA	Bouteloua hayi	Kay's grama		
P	BOOL	Bouteloua oligostachya			
P	BOH2	Bouteloua parryi	Perry's grama		
P	BORE3	Bouteloua pectinata			
P	BOHA	Bouteloua radicata	purple grama		
P	BOHA	Bouteloua ramosa	Ohio grama		
P	BORE2	Bouteloua repens	slender grama		

Record Last Updated	Area Type Name	Area Symbol	Area Name	Area Common Name
10/27/2009 10:26:10	State or Territory	AZ	Arizona	ARIZONA NEEDLE G...
10/27/2009 10:26:10	State or Territory	CA	California	needle grama
10/27/2009 10:26:10	State or Territory	MD	Maryland	needle grama
10/27/2009 10:26:10	State or Territory	NM	New Mexico	needle grama
10/27/2009 10:26:10	State or Territory	NV	Nevada	needle grama
10/27/2009 10:26:10	State or Territory	TX	Texas	needle grama
10/27/2009 10:26:10	State or Territory	UT	Utah	needle grama

Examining the Other Vegetative Classes Tables

The Other Vegetative Classes tables record vegetation classification types and sites other than those defined according to NRCS standards. An example is the USFS forest habitat type. The individual sites that belong to each classification type are recorded in the Other Vegetative Classification Table. Ecological sites defined according to NRCS standards are recorded in the Ecological Site table.

1. On the **Table Explorer** panel, choose and open the **Other Vegetative Classification Type** table. The table is empty.
2. From the Queries Explorer panel, choose the National query named **“Plant (other veg classes) by name”**.
3. Other Vegetative Classes data is downloaded during the database initialization and when the database is refreshed, therefore the query will be **“Run Against Local Database”**.

Selections for Running Query Plant (other veg classes) by name

Target Tables: ☒ Other Vegetative Classification Type Run

other veg class name: * Cancel

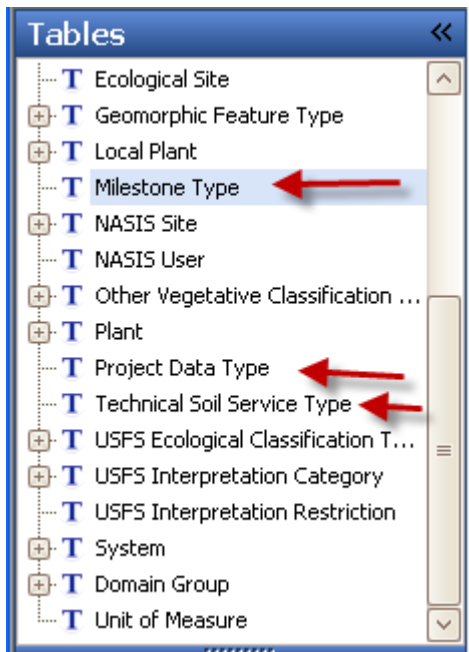
☐ Check Out

4. For the sake of this exercise, set the parameters as “*” and run the query. It will load 131 rows or data. Use the existing data in the table to identify the local use of this table.

	Other Veg Class Type Name	Other Veg Class Type Reference	Other Veg Class Type Description	Obsolete?	Other
P	Forest Habitat Types of E. Idaho - W. Wyoming (GTR-1...	Forest Habitat Types of Eastern Idaho-Wester...	Records using this reference have ...	<input type="checkbox"/>	MLRA
P	Forested Plant Assoc. of the Olympic NF (R6-ECOL-TP ...	Forested Plant Associations of Olympic Nations...		<input type="checkbox"/>	MLRA
P	Forest Habitat Types of the Colville Indian Reservation	Forest Habitat Types of the Colville Indian Res...		<input type="checkbox"/>	MLRA
P	Oregon Coast-Perouse Plant Association Groups (PAGs)	Plant Association Groups (PAGs) in the Oregon Coast...		<input type="checkbox"/>	MLRA
P	Forested PSM Class. of the Mt. Baker-Snoqualmie NF	Forested Plant Associations of the Mt. Baker-S...		<input type="checkbox"/>	MLRA
P	Forested PSM Associations of the Oregon-East Cascades	Forested Plant Associations of the Oregon East...		<input type="checkbox"/>	MLRA
P	Forest Habitat Type			<input type="checkbox"/>	MLRA
P	Grassable Forest			<input type="checkbox"/>	MLRA
P	Range Site			<input type="checkbox"/>	MLRA
P	Unknown			<input type="checkbox"/>	MLRA
P	Adirondack-Catskill Vegetation			<input type="checkbox"/>	MLRA
P	Redwood National Park classification	Popovici, J. et al. 1997	This classification system uses general	<input type="checkbox"/>	MLRA
P	Terrestrial Natural Communities of California	Holland, Robert B., Dept. of Fish and Game, Stat...	Continuity/ Descriptions of the Ter...	<input type="checkbox"/>	MLRA
P	Santa Catalina Island Mapping Project	Dennis Throp, Vegetation Specialist, Santa Ca...	Santa Catalina Vegetation Mapping Pro...	<input type="checkbox"/>	MLRA
P	Palau Limestone Forest	Palau & Chelchakid	The limestone forests are limestone	<input type="checkbox"/>	MLRA
P	Palau Old-Growth Forest	Old & Nelson	This forest type has previously been...	<input type="checkbox"/>	MLRA
P	Palau Limestone Mangrove Forest	Chia & Insak	The mangrove forest ecological type...	<input type="checkbox"/>	MLRA
P	Palau Volcanic Mangrove Forest	Ilachetomel and Nariak		<input type="checkbox"/>	MLRA
P	Palau Riparian Forest	Nigersoul	What makes the riparian forest uni...	<input type="checkbox"/>	MLRA

Examining the “Type” Tables

There are three “type” tables:
Milestone Type,
Project Data Type, and the
Technical Service Type.



These tables are used to develop the choice lists for the Project Milestones, Technical soil service activities that are used to record TSS progress and The Project Data Needs table to record data layers and imagery products that might be needed to complete a soil survey project.

These tables are owned by NSSC Pangaea and members of that site can insert new records for use as choice list fields.

Chapter 12: Examining Calculations and Validations

Examining Calculations

Several data elements in the map unit tables and pedon tables can be calculated from information entered in other data elements. Some of the calculations concatenate manually entered fields to populate group names. For example, the taxonomic class calculation concatenates manually entered taxonomic fields (order, suborder, great group, etc) to create a taxonomic class for a given component. Other calculations populate specific property fields based on algorithms developed using regression analysis from soil properties within the National Soil Survey Laboratory database.

Calculations are available to populate fields. It is the responsibility of the user to verify the quality of the calculated data. **It is a requirement that anyone running a calculation will take the necessary time to review the calculated data.**

Calculable columns contain a superimposed source field (graphical image) that indicates whether the calculable column was calculated (**C**), or entered manually (**M**), or populated prior to a previous conversion (**P**).

All current Calculations and Validations are preloaded into the local database at the time of database initialization and are updated when the local database is refreshed. There is no need to query for calculations or validations. They are viewed in the “Calculations/Validations” object.

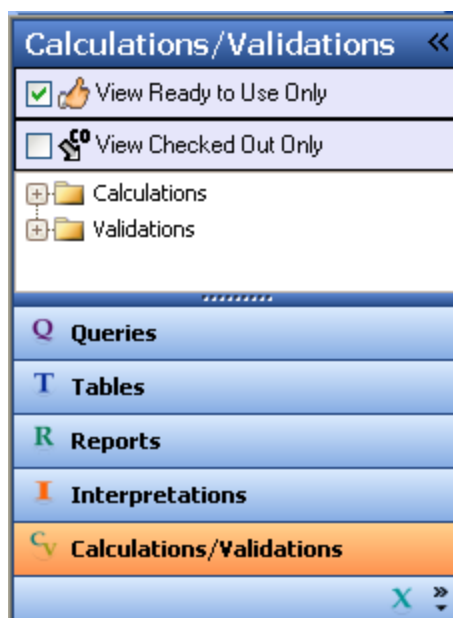
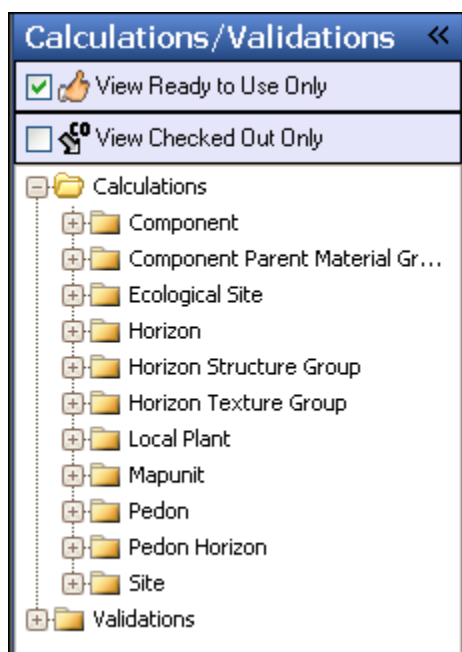
All users can view calculations and validations to better understand the logic and algorithms used to calculate a field. Users belonging to the “Pangaea” site and “Standard Calculations” group are the only persons who can create or modify calculations.

A few calculations will populate the Low, RV and High columns for a given soil property. For those calculations that populate only the RV, ***it is the user’s responsibility to review calculated fields and to complete the population of the Low and High fields for that given property.***

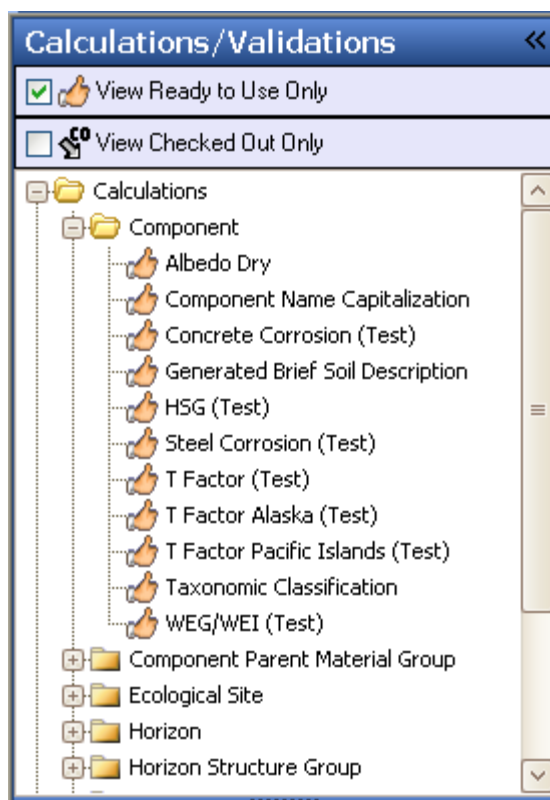
Calculations are used to populate a field in NASIS. Before a calculation can be activated, the user must have permission to edit the data and it must be “Checked Out” from the national database.

NASIS User Guide

1. On the Explorer panel, click the Calculations/Validations Object.
2. Notice the two filters available for viewing the Calculations and Validations. The “thumbs up” identifies those “Ready to use”. For those who author Calculations and Validations, the “View Check Out Only” is available for managing the list.



3. Click on the plus sign to open the Calculations tree. Notice that all Calculations are grouped by the affected table.



4. Open the Component table tree by clicking on the plus sign to open the tree.
5. Each table subfolder can be opened to view the various calculations available for use.
6. To view a calculation, double click on the specific calculation, or right click and Open.

NASIS User Guide

The screenshot shows the 'WEG/WEI (Test)' dialog box with the 'General' tab selected. The dialog has three tabs: 'General', 'Calculation/Validation Script', and 'Text'. The 'General' tab contains the following fields:

- Sequence:** A small icon button.
- Name:** WEG/WEI (Test)
- Calculation Type:** Calculation
- Description:** Calculates WEG and WEI. Data elements used in the WEG/WEI calculation:
 - CaCO3 equivalent (rv) or surface effervescence class from the representative pedon, Component Pedon Table
 - total clay (rv)
 - very fine sand (rv)
 - 1/3 bar bulk density (rv)
 - texture modifier & class (RV), Horizon Texture Group Table
 - texture (rv), Horizon Texture Table
- Base Table:** Component
- Ready to use?** ☒
- NASIS Site:** NSSC Pangaea
- NASIS Group:** Standard Calculations
- Object Last Updated:** 5/11/2009 3:08:35 PM
- Object Last Updated By:** Seybold, Cathy
- Rec ID:** 1190

7. Notice the three tabs providing General information, the Script and the Text notes. The General tab provides for the name and description, along with base table and ownership information.
8. The Script tab contains the literal SQL scripting necessary for the calculation.

The screenshot shows the 'WEG/WEI (Test)' dialog box with the 'Calculation/Validation Script' tab selected. The tab contains the following SQL script:

```
1 Base Table Component.
2
3 EXEC SQL
4 SELECT coiid, compkind, localphase, taxgrtgroup, taxorder, taxtempregime, taxsuborder, taxsu
5 FROM component, chorizon, chtexturegrp, chtexture
6 WHERE join component to chorizon and join chorizon to chtexturegrp and join chtexturegrp to
7 AND texture not matches "*MPM*" AND texture not matches "*SPM*" AND texture not matches "*HF
8 SORT BY coiid, hzdept_r
9 AGGREGATE COLUMN hzdept_r FIRST, hzdeph_r FIRST, texcl FIRST, texture FIRST, claytotal_r FIF
10
11 #EXEC SQL
12 #SELECT pondfreqcl
13 #FROM component, comonth
14 #WHERE join component to comonth;
15 #SORT by pondfreqcl DESC
16 #AGGREGATE COLUMN pondfreqcl FIRST.
17
18 EXEC SQL
19 SELECT sfragcov_r
20 FROM component, cosurffrags
21 WHERE join component to cosurffrags;
```

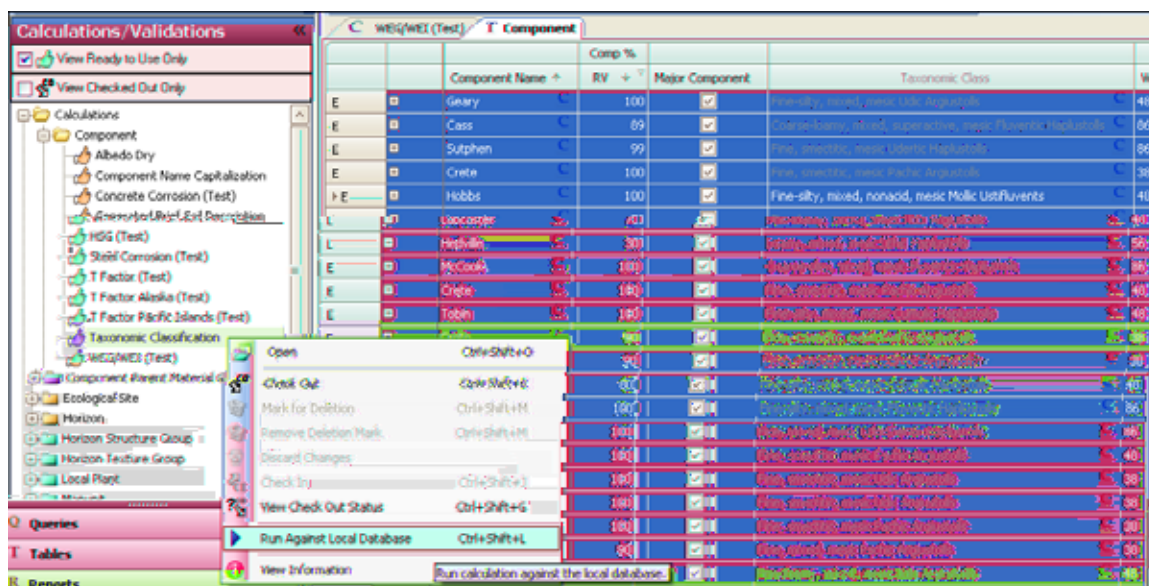
Note: Calculations are written using the structured query language. The “Base Table” in line 1 signifies the calculation is used in the Component table.

Running Calculations

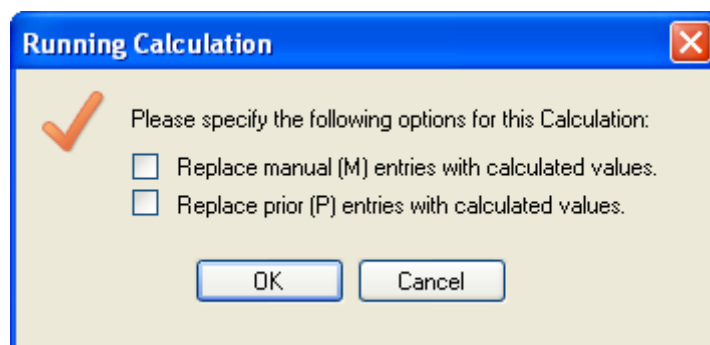
1. Load data into the table required by the calculation. In this example data is loaded into the Component table. Notice the superimposed images of the **C**, **M** and **P** previously explained in the beginning of this chapter.

C WEG/WEI (Test)		T Component										
		Component Name ^	RV ^ ▾	Major Component	WEI	WEG	Low	RV	High	Local Runoff Class	T	Eros
	+	Geary C	100	✓	48	6	3.0	5.0	7.0	medium	P	P 5
	+	Cass C	89	✓	86	3	0.0	1.0	2.0	negligible	P	P 4 0
	+	Sutphen C	99	✓	86	4	0.0	1.0	1.0	very high	P	P 5
	+	Crete C	100	✓	38	7	3.0	5.0	7.0	high	P	P 5 1
	+	Hobbs C	100	✓	48	6	0.0	2.0	3.0	low	P	P 5
L	+	Lancaster C	70	✓	48	6	3.0	8.0	12.0	medium	P	P 3
L	+	Hedville C	30	✓	56	5	7.0	11.0	15.0	high	M	P 1
	+	McCook C	100	✓	86	4L	0.0	1.0	2.0			P 5
	+	Crete C	100	✓	48	6	0.0	1.0	2.0	high	P	P 5 1
	+	Tobin C	100	✓	48	6	0.0	1.0	2.0	negligible	P	P 5
	+	Crete C	90	✓	38	7	0.0	1.0	1.0	medium	P	P 5
	+	Ladysmith C	90	✓	38	7	0.0	1.0	2.0	high	P	P 5
	+	Muir C	80	✓	48	6	0.0	1.0	2.0	negligible	P	P 5
	+	Bridgeport M	100	✓	86	4L	0.0	1.0	1.0	negligible	P	P 5
	+	Clime C	100	✓	86	4	3.0	5.0	6.0	very low	P	P 3
	+	Crete C	100	✓	48	6	1.0	2.0	3.0	very high	P	P 5
	+	Longford C	100	✓	38	7	3.0	5.0	7.0	medium	P	P 5
	+	Longford C	100	✓	38	7	3.0	4.0	7.0	medium	P	P 5

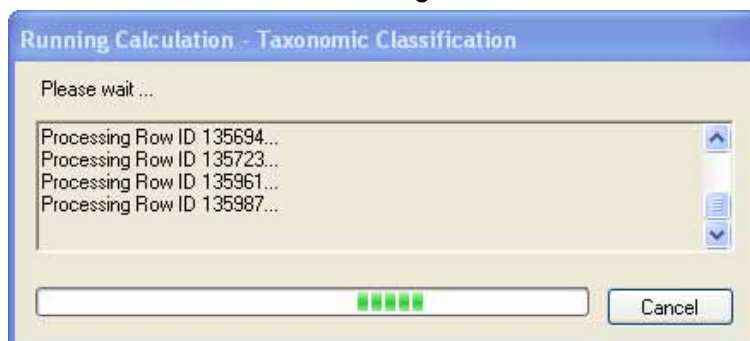
2. Data must be “**Checked Out**” in order to run a calculation.
3. Highlight those rows to be calculated. If all rows are to be calculated, then use the **Ctrl + A** keystroke to highlight all rows. Then right-click on the calculation and choose **Run Against Local Database**



- The parameter box will appear allowing calculation options for replacing Manual or Prior entries.



- The calculation will track the rows being affected:



- The result will identify those rows that were modified by the calculation. Note the row status of "M" – modified (red arrows). Notice the Status Message panel and the messages that appear during the course of the calculation. Locked records are not calculated (blue arrow).

NASIS User Guide

Component Name	Comp %	RV	Major Component	Taxonomic Class	WEI	WEI
Geary	100			Fine-silty, mixed, superactive, mesic Udic Argustolls	48	6
Cass	89			Coarse-loamy, mixed, superactive, mesic Fluventic Haplustolls	86	3
Gulphen	99			Fine, smectitic, mesic Udic Haplustolls	86	4
Grete	100			Fine, smectitic, mesic Pachic Argustolls	38	7
Hobbs	100			Fine-silty, mixed, nonacid, mesic Mollis Ustifluvents	48	6
Lancaster	70			Fine-loamy, mixed, mesic Udic Argustolls	48	6
Hedville	30			Loamy, mixed, mesic Udic Haplustolls	56	5
McCask	100			Coarse-silty, mixed, mesic Fluventic Haplustolls	86	4
Grete	100			Fine, smectitic, mesic Pachic Argustolls	48	6
Tobin	100			Fine-silty, mixed, superactive, mesic Cumulic Haplustolls	48	6
Grete	90			Fine, smectitic, mesic Pachic Argustolls	38	7
Ladyman	90			Fine, smectitic, mesic Udic Argustolls	38	7
Mur	80			Fine-silty, mixed, mesic Cumulic Haplustolls	48	6
Bridgeport	100			Fine-silty, mixed, superactive, mesic Fluventic Haplustolls	86	4
Olme	100			Fine, mixed, active, mesic Udothentic Haplustolls	86	4
Longford	100			Fine, smectitic, mesic Udic Argustolls	38	7
Longford	100			Fine, smectitic, mesic Udic Argustolls	38	7
Smolan	100			Fine, smectitic, mesic Pachic Argustolls	38	7
Irwin	90			Fine, mixed, mesic Pachic Argustolls	38	7
Wells	90			Fine-loamy, mixed, mesic Udic Argustolls	48	6

Running Calculation 'Taxonomic Classification' on base table 'Component'...
 Number of rows recalculated: 17
 Number of rows skipped due to permissions: 2
 Running of Calculation 'Taxonomic Classification' complete!

7. The data is then “Uploaded All Changes to the National Database”.
8. Finally, the data is “Checked In” to the national database.
9. There is a logical progression to running calculations. For instance, to calculate the Taxonomic Classification, the individual taxonomy data elements must first be populated.
10. Calculation order for Horizon table:
 1. Texture group name
 2. Horizon designation
 3. Particle size estimator
(use lab or estimated sand, silt and clay before considering)
 4. Particle density
 5. Total Fragment Volume RV Sum (Low and High are manual entries)
 6. Percent passing sieves/rock fragments
 7. Water content - oven-dry bulk density
 8. CEC/ECEC
 9. Liquid Limit and PI (Atterberg limits)
 10. Unified (report)
 11. AASHTO (report)
 12. AASHTO group index
 13. AWC
 14. Albedo (requires a linked pedon)
 15. Kf and Kw (Test) – verify sand fractions and silt before running.

Examining Validations

Validations are used to verify data that is populated in the database. SQL scripts are written to compare the data populated in a field to the expectations. Like Calculations, Validations are preloaded during the initialization or refresh of the database. The validation is table dependent. Scroll down in the Calculations/Validations Explorer panel to view the current Validations. Users belonging to the Pangaea site and Standard Calculations group can enter or modify calculations. However, other users may view them to better understand how data for a field is calculated.

1. On the Explorer panel, click the Calculations/Validations Object.

2. Notice the two filters available for viewing the Calculations and Validations.

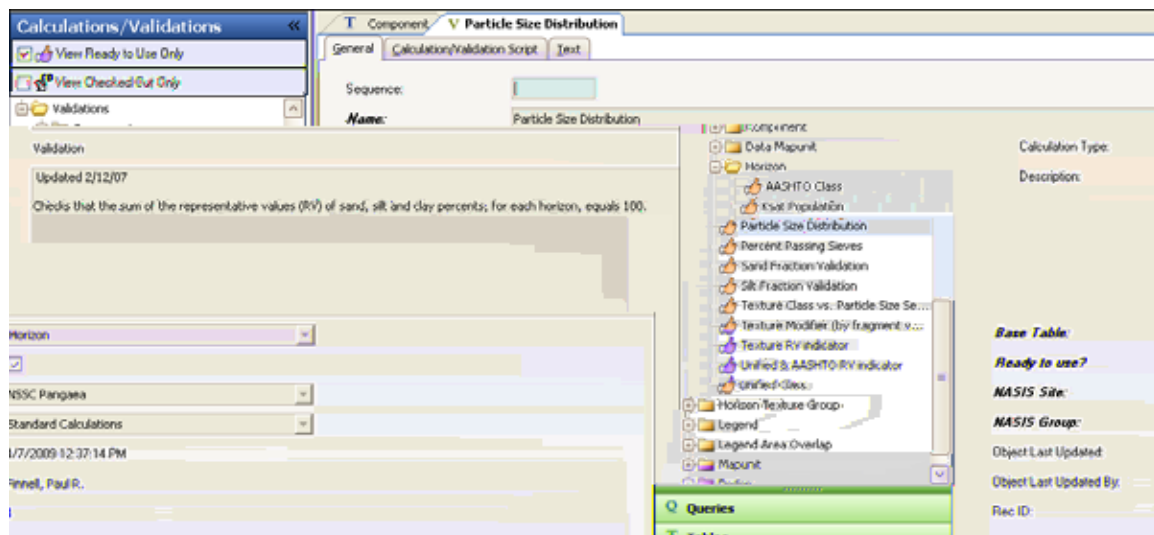
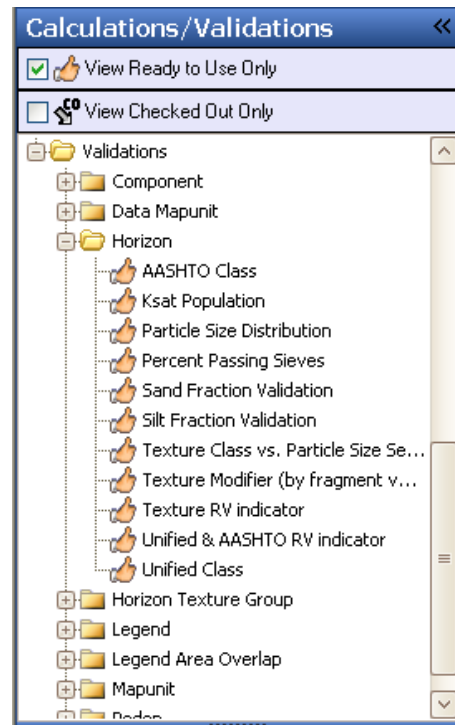
3. Click on the plus sign to open the Validations tree. Notice that all Validations are grouped by table.

4. Each table can be opened to view the Validations available for use.

5. Open the Horizon table tree by clicking on the plus sign to open the tree.

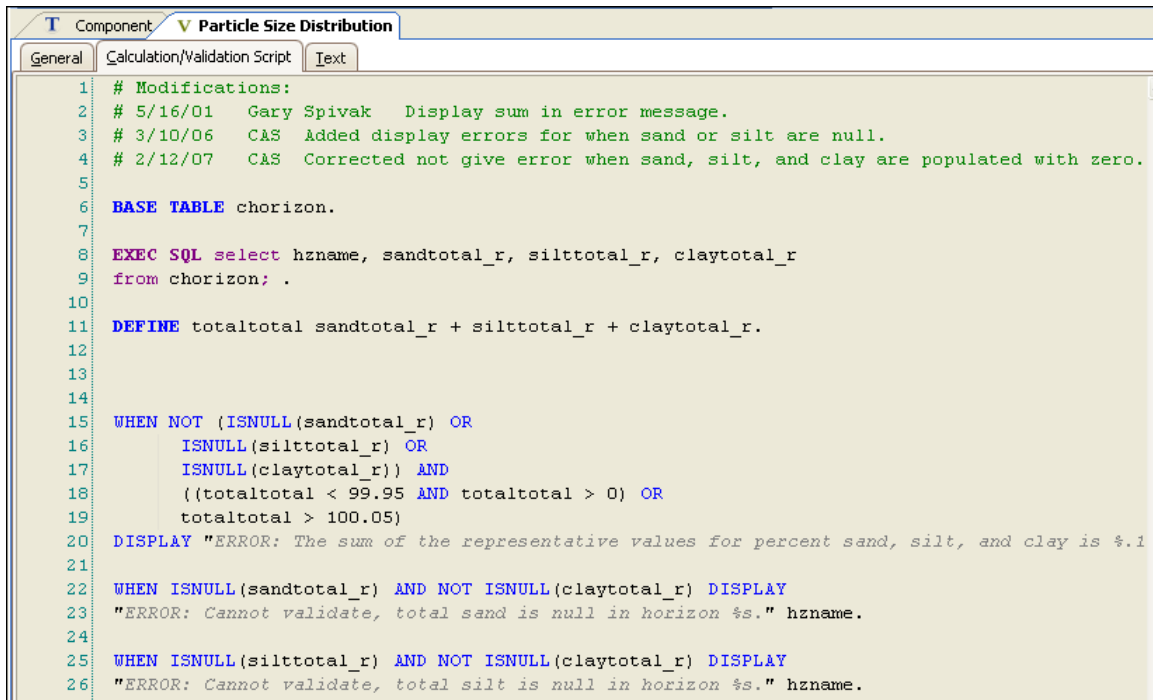
6. To open a validation into the Editor Panel, double click on the specific validation, or right click and Open.

7. Once again, the three tabs provide General information, the Script and the Text notes. The General tab provides for the name and description, along with base table and ownership information.



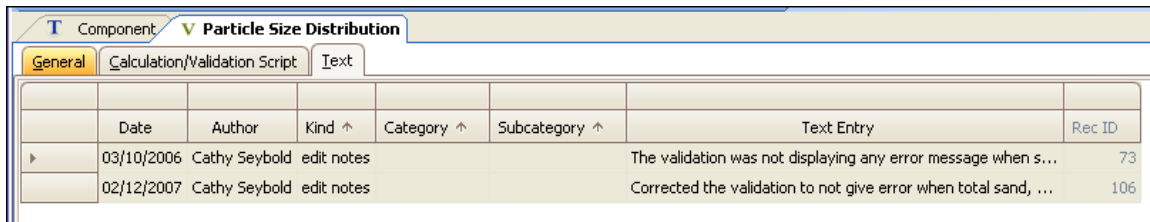
NASIS User Guide

8. The validation is an SQL script:



```
1  # Modifications:
2  # 5/16/01 Gary Spivak Display sum in error message.
3  # 3/10/06 CAS Added display errors for when sand or silt are null.
4  # 2/12/07 CAS Corrected not give error when sand, silt, and clay are populated with zero.
5
6  BASE TABLE chorizon.
7
8  EXEC SQL select hzname, sandtotal_r, silttotal_r, claytotal_r
9  from chorizon; .
10
11  DEFINE totaltotal sandtotal_r + silttotal_r + claytotal_r.
12
13
14
15  WHEN NOT (ISNULL(sandtotal_r) OR
16           ISNULL(silttotal_r) OR
17           ISNULL(claytotal_r)) AND
18           ((totaltotal < 99.95 AND totaltotal > 0) OR
19            totaltotal > 100.05)
20  DISPLAY "ERROR: The sum of the representative values for percent sand, silt, and clay is %.1
21
22  WHEN ISNULL(sandtotal_r) AND NOT ISNULL(claytotal_r) DISPLAY
23  "ERROR: Cannot validate, total sand is null in horizon %s." hzname.
24
25  WHEN ISNULL(silttotal_r) AND NOT ISNULL(claytotal_r) DISPLAY
26  "ERROR: Cannot validate, total silt is null in horizon %s." hzname.
```

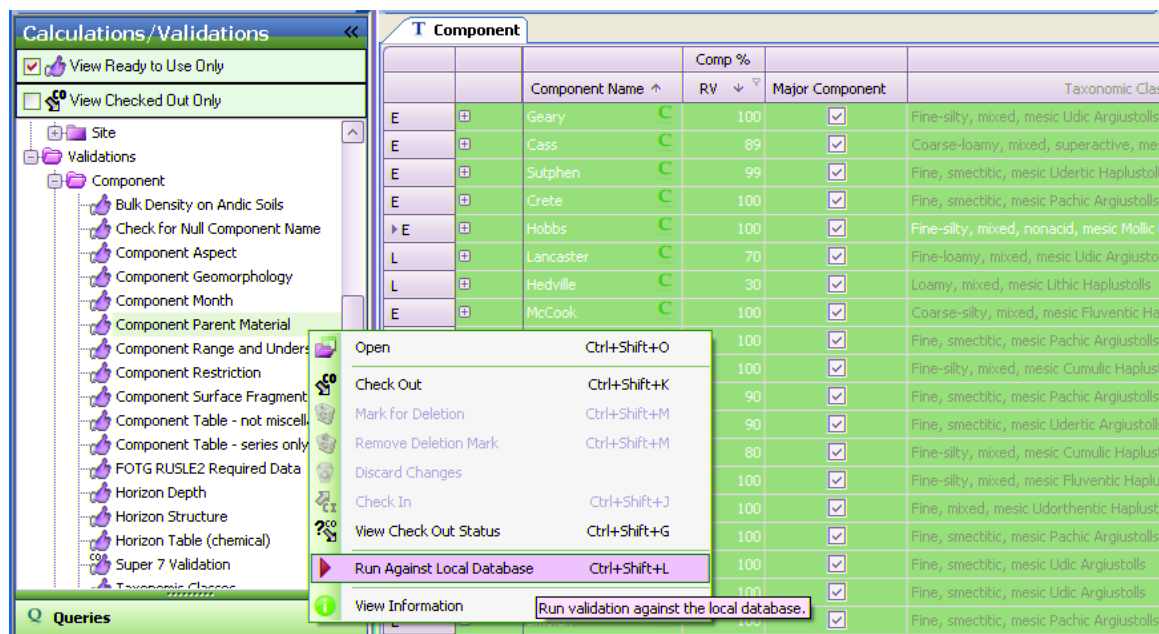
9. The Text table is used to identify any edit or documentation supporting the validation:



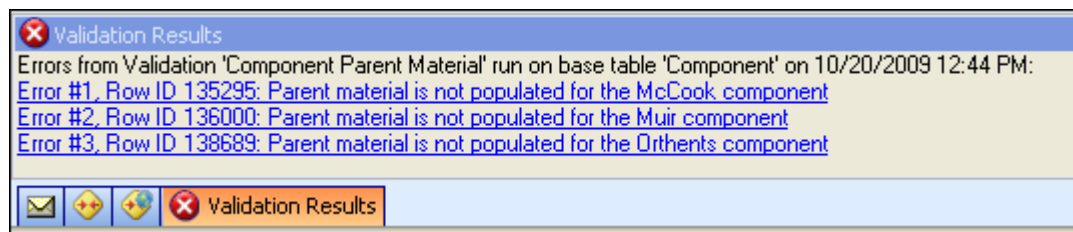
	Date	Author	Kind	Category	Subcategory	Text Entry	Rec ID
▶	03/10/2006	Cathy Seybold	edit notes			The validation was not displaying any error message when s...	73
	02/12/2007	Cathy Seybold	edit notes			Corrected the validation to not give error when total sand, ...	106

Running Validations

1. Load data into the table to be validated. In this example data is loaded into the Component table.
2. The validation will be run against the previous dataset in the Component table.
3. The Component table is opened and the rows are highlighted (Ctrl+a)



4. The Validation tree is opened to the Component table, a validation is selected, and it is Run Against Local Database. It is NOT required to Check Out data to run a validation.
5. The Validation Results are available for review in the Messages panel:



6. The link is clicked to go to the specific record.
7. Data that is found at fault must be "Checked Out" before editing.

Summary:

1. Calculations and Validations are written by, and owned by, the Pangaea Site and Standard Calculations or Standard Validations group.
2. Calculations and Validations are available in the local database. They are downloaded from the national server upon database initialization or database refresh.
3. Calculations and Validations are table specific.
4. Calculations are used to populate specific data elements based on other data elements.
5. Results of a calculation must be verified by the user before saving the data.
6. Validations are used to verify populated data.
7. Results of a failed validation must be checked out in order to edit.

Chapter 13: Managing Soil Survey Data

Chapter 3 introduced the concept of database objects and explained the creation of the new “Mapunit” object. Chapter 7 introduced the objects and tables associated with the aggregated map unit data (Area, Legend, Mapunit and Data Mapunit). Chapter 13 will introduce the database correlation concepts of managing the map units.

There are 3 typical correlation events that affect map unit management.

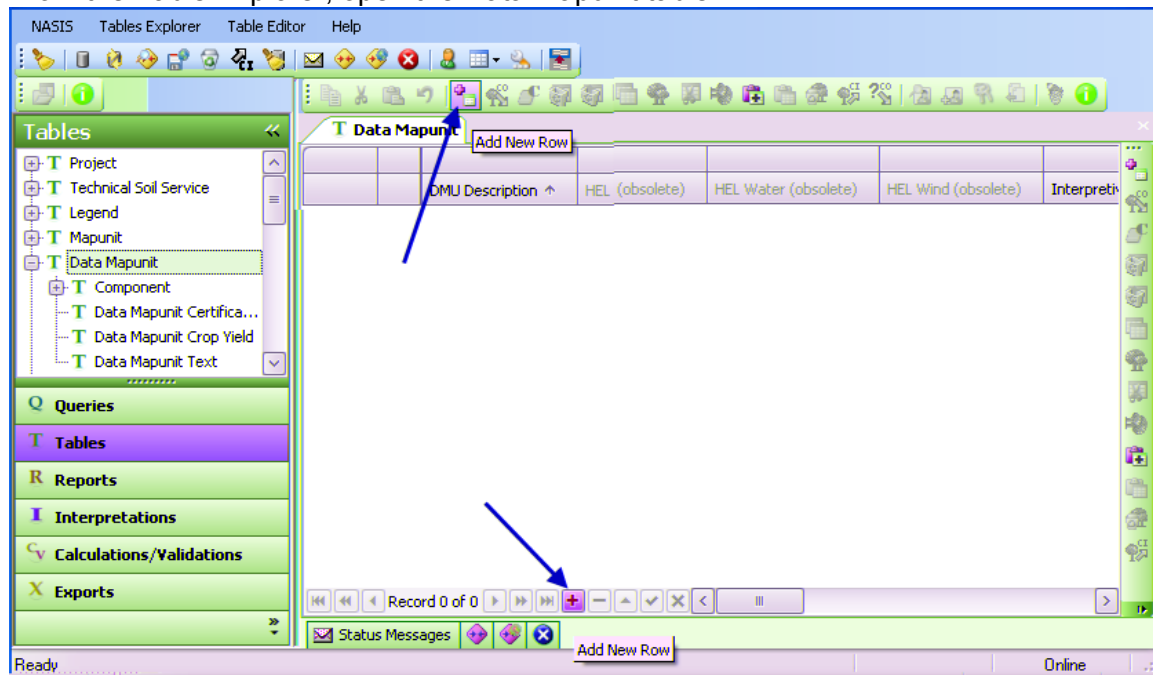
1. creating a new map unit (page 13.1)
2. combining existing map units (page 13.8)
3. splitting an existing map unit into two or more map units (page 13.16)
4. analyzing multiple same named map units into an MLRA concept (Chapter 14)

Creating a New Map Unit

The creation of a new map unit begins with identifying the “map unit concept”; taking the idea and translating it into the database. This process begins in the Data Mapunit object. It is in the Data Mapunit object that the map unit concept is created and once created, then linked to a Mapunit, then subsequently to a Legend.

Step 1 – Create a new Data Mapunit

From the Table Explorer, open the Data Mapunit table.



Toolbar icons are available to add a new row or the Table Editor Menu can be used.

Step 2 – Populate the Data mapunit

The majority of the time, a Data Mapunit will be populated by copying an existing Data Mapunit or by copying an existing component and pasting that record into the new Data Mapunit. For this example, The Aberdeen series will be developed into a new map unit.

DMU Description	HEL (obsolete)	HEL Water (obsolete)	HEL Wind (obsolete)	Interpretive Focus	Order of Mapping
MLRA 55 Aberdeen ...				cropland	order 2

The DMU Description is the field used to provide a descriptive name to the set of data that exists in the object. The **HEL fields** are no longer available to edit and are shown only for archival purposes. The **Interpretative Focus** is used to identify the basic interpretation of the land. The **Order of Mapping** identifies the order in for the soil survey. The remaining columns in the Data Mapunit table are state specific map unit interpretations to be populated for map units that reside in those states.

Step 3 – Open and populate the DMU child tables

DMU Description	HEL (obsolete)	HEL Water (obsolete)	HEL Wind (obsolete)	Interpretive Focus	Order of Mapping
MLRA 55 Aberdeen ...				cropland	order 2

Component	Local Phase	Taxon Kind	Major Component
Aberdeen		series	
Bearden		series	

Click on the plus sign to the left in the Data Mapunit table to open the Child tables. Using the toolbar or menu, insert a new row in the Component table and begin the process of populating the map unit concept. Insert new rows to add additional components.

Population Rules:

- If a component is added, all fields should be reviewed and populated to meet the needs of the survey.
- Phase criteria is not allowed in the component name field

Step 4 – Open and populate the Component child tables

The screenshot shows the 'Data Mapunit' table in the NASIS application. The main table has columns: DMU Description, HEL (obsolete), HEL Water (obsolete), HEL Wind (obsolete), Interpretive Focus, Order of Mapping, Prod Index, CT Septic Potential, and IP. A record for 'MURA 55 Aberdeen' is selected. Below the main table, several child tables are open for editing:

- Component Table:** Columns include Comp %, Component Name, Local Phase, Taxon Kind, Major Component, and Slope Gradient. A record for '95 Aberdeen' is shown.
- Horizon Table:** Columns include Designation, Disc, Master, Prime, Sub, Low, RV, High, Bottom Depth, and Thicken. A record for 'Ap' is shown.
- Component Canopy Cover Table:** Columns include Designation, Disc, Master, Prime, Sub, Low, RV, High, Bottom Depth, and Thicken. A record for 'Ap' is shown.
- Component Crop Yield Table:** Columns include Designation, Disc, Master, Prime, Sub, Low, RV, High, Bottom Depth, and Thicken. A record for 'Ap' is shown.
- Component Diagnostic Features Table:** Columns include Designation, Disc, Master, Prime, Sub, Low, RV, High, Bottom Depth, and Thicken. A record for 'Ap' is shown.
- Component Ecological Site Table:** Columns include Designation, Disc, Master, Prime, Sub, Low, RV, High, Bottom Depth, and Thicken. A record for 'Ap' is shown.
- Component Erosion Ac Table:** Columns include Designation, Disc, Master, Prime, Sub, Low, RV, High, Bottom Depth, and Thicken. A record for 'Ap' is shown.

Once again, click on the plus sign to the left of the Component table to open its child tables. Insert new row(s) into the Horizon table and begin populating the Horizon level data. Completely populate all Component child tables and Horizon child tables.

Population Rules:

- Minimize the use of calculations by examining existing laboratory or field determined data
- Populate all fields

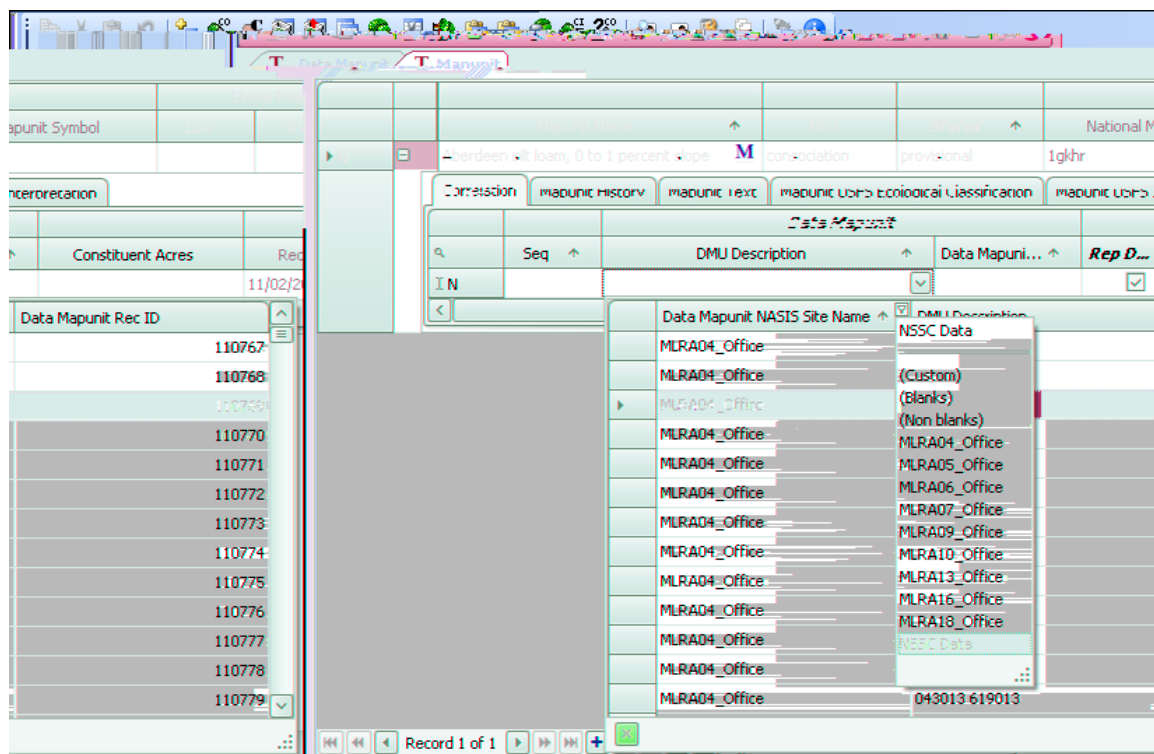
Step 5 – Create the Mapunit

Open the Explorer panel and navigate to the Mapunit table. Insert a new row and begin populating the mapunit fields. Notice the map unit is listed as a provisional map unit. Once the edit is ended the National Map unit Symbol is assigned. This value is assigned by converting the record ID number to a Base31 alphanumeric character.

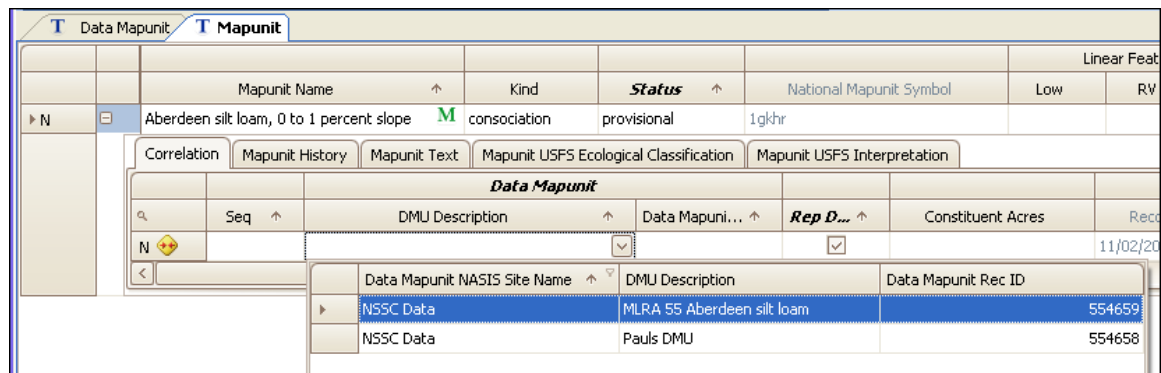
The screenshot shows the 'Mapunit' table in the NASIS application. The table has columns: Mapunit Name, Kind, Status, National Mapunit Symbol, and Linear Feature Width. A new record is being added:

Mapunit Name	Kind	Status	National Mapunit Symbol	Linear Feature Width
Aberdeen silt loam, 0 to 1 percent slope	conservation	provisional	Light	

Step 6 – Link the Mapunit and Datamapunit

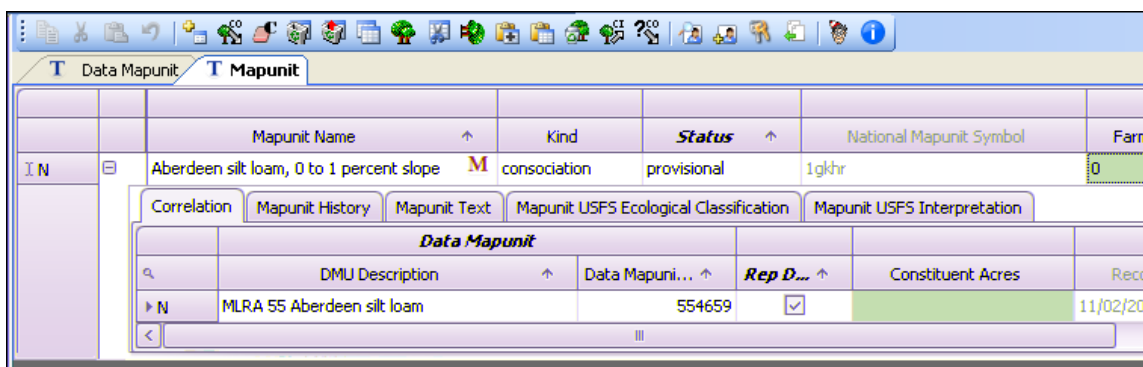


Open the Mapunit child tables by clicking on the plus sign to the left of the table. Insert a new row into the Correlation table. Use the choice list in the DMU Description field. All choices lists are temporary tables and can be sorted or filtered. In this instance, the new Data mapunit is owned by the NSSC Data site; by filtering on this site the DMU can be easily identified:



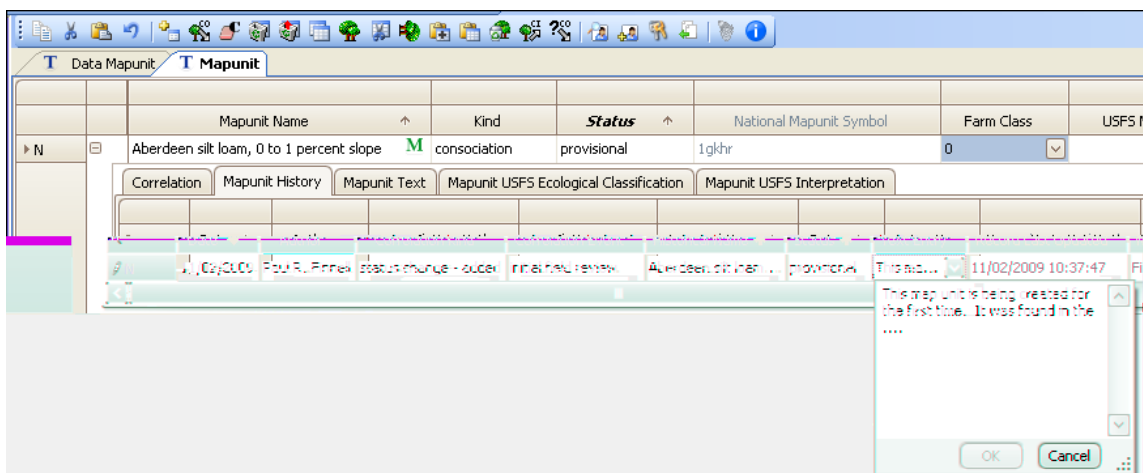
NASIS User Guide

The DMU is now linked to its map unit.



Step 7 – Document the Mapunit

The map unit **must be documented** at each correlation event. The creation of the map unit initiates the first documentation of the map unit. Open the Mapunit History table and populate the first record.



The map unit is to be documented in the Mapunit History table at all subsequent correlation events.

Step 8 – Linking the Mapunit to the Legend

Notice that the map unit status is assigned in the Mapunit table. As a new map unit, this status is “provisional”.

To link this new map unit to a legend, load the legend into the Editor panel and verify the legend is “checked out” in order to edit the legend.

Open the Legend child tables and view the Legend Mapunit table.

NASIS User Guide

Area							
Area Type NASIS Site Name	Area Type Name	Area Symbol	Area Name	Area Acres	MLRA Office	Legend Description	Survey Sta
N55C Pangaea	Non-MLRA Soil Survey Area	ND003	Barnes County, North Dakota	960700	bismarck, nd	Detailed Soil Map Legend	extensive m

Mapunit						
Seq	Mapunit Symbol	Total Acres	National Mapunit Symbol	Mapunit Name	Mapunit Sta	
2	d2rx	3300		Tonka silt loam, 0 to 1 percent slopes	correlated	
3	d2s1	19310		Parnell silty clay loam, 0 to 1 percent slopes	correlated	
6	d2sg	15010		Southam silty clay loam, 0 to 1 percent slopes	correlated	
9	d2t5	1860		Nutley silty clay, 0 to 2 percent slopes	correlated	
9B	d2tb	3740		Nutley silty clay, 2 to 6 percent slopes	correlated	
9C	d2tc	3570		Nutley silty clay, 6 to 15 percent slopes	correlated	
12	d2rg	9650		Limore-Kranzburg silty clay loams, 0 to 2 per...	correlated	
13B	d2rh	8880		Kranzburg-Limore silty clay loams, 2 to 6 per...	correlated	
14B	d2rj	137360		Barnes-Buse loams, 3 to 6 percent slopes	correlated	
14C	d2rk	51950		Barnes-Buse loams, 6 to 9 percent slopes	correlated	
14D	d2rl	9440		Barnes-Buse loams, 9 to 15 percent slopes	correlated	
15	d2rm	2570		Sweroda-Lanona fine sandy loams, 0 to 3 per...	correlated	

This legend must be “checked out”.

Area							
Area Type NASIS Site Name	Area Type Name	Area Symbol	Area Name	Area Acres	MLRA Office	Legend Description	Survey Sta
N55C Pangaea	Non-MLRA Soil Survey Area	ND003	Barnes County, North Dakota	960700	bismarck, nd	Detailed Soil Map Legend	extensive

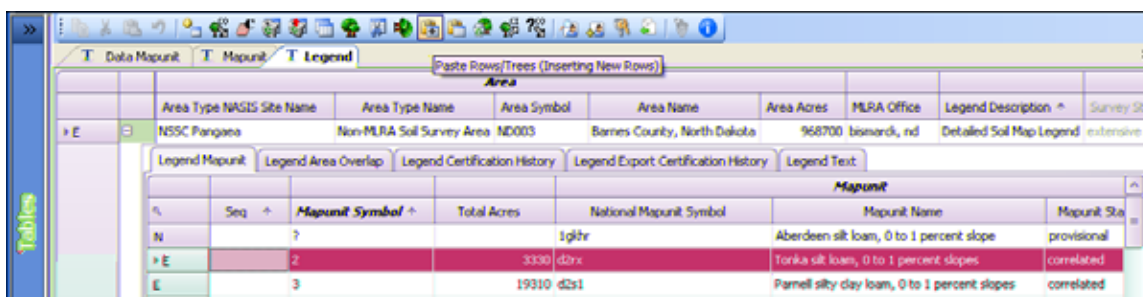
Mapunit						
Seq	Mapunit Symbol	Total Acres	National Mapunit Symbol	Mapunit Name	Mapunit Sta	
2	d2rx	3300		Tonka silt loam, 0 to 1 percent slopes	correlated	
3	d2s1	19310		Parnell silty clay loam, 0 to 1 percent slopes	correlated	
6	d2sg	15010		Southam silty clay loam, 0 to 1 percent slopes	correlated	
9	d2t5	1860		Nutley silty clay, 0 to 2 percent slopes	correlated	
9B	d2tb	3740		Nutley silty clay, 2 to 6 percent slopes	correlated	
9C	d2tc	3570		Nutley silty clay, 6 to 15 percent slopes	correlated	
12	d2rg	9650		Limore-Kranzburg silty clay loams, 0 to 2 per...	correlated	
13B	d2rh	8880		Kranzburg-Limore silty clay loams, 2 to 6 per...	correlated	
14B	d2rj	137360		Barnes-Buse loams, 3 to 6 percent slopes	correlated	
14C	d2rk	51950		Barnes-Buse loams, 6 to 9 percent slopes	correlated	
14D	d2rl	9440		Barnes-Buse loams, 9 to 15 percent slopes	correlated	
15	d2rm	2570		Sweroda-Lanona fine sandy loams, 0 to 3 per...	correlated	

Return to the map unit table and copy the new mapunit:

>>

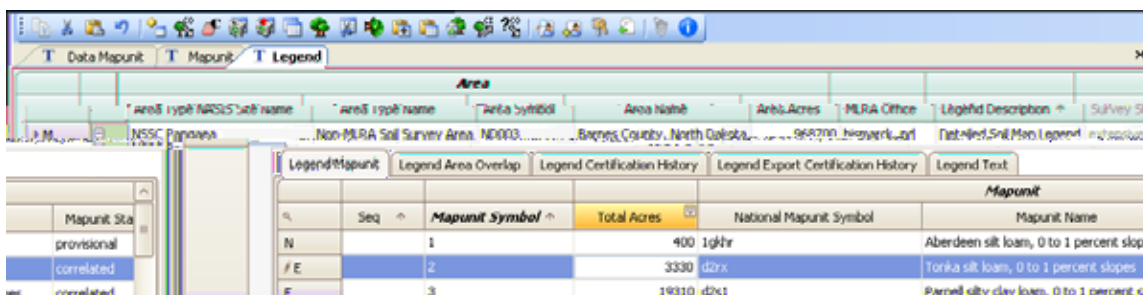
NASIS User Guide

Return to the Legend Mapunit table and paste in the new map unit:



Area						
Area Type	NASIS Site Name	Area Type Name	Area Symbol	Area Name	Area Acres	MLRA Office
NSSC	Pangaea	Non-MLRA Soil Survey Area	ND003	Barnes County, North Dakota	968700	bismarck, nd
Legend Mapunit						
Seq	Mapunit Symbol	Total Acres	National Mapunit Symbol	Mapunit Name	Mapunit Sta	
N	1	400	1g1hr	Aberdeen silt loam, 0 to 1 percent slope	provisional	
E	2	3330	d2rs	Tonka silt loam, 0 to 1 percent slopes	correlated	
E	3	19310	d2s1	Parnell silty clay loam, 0 to 1 percent slopes	correlated	

Notice the two fields to be populated are the Mapunit Symbol and the Total Acres.



Area						
Area Type	NASIS Site Name	Area Type Name	Area Symbol	Area Name	Area Acres	MLRA Office
NSSC	Pangaea	Non-MLRA Soil Survey Area	ND003	Barnes County, North Dakota	968700	bismarck, nd
Legend Mapunit						
Seq	Mapunit Symbol	Total Acres	National Mapunit Symbol	Mapunit Name	Mapunit Sta	
N	1	400	1g1hr	Aberdeen silt loam, 0 to 1 percent slope	provisional	
E	2	3330	d2rs	Tonka silt loam, 0 to 1 percent slopes	correlated	
E	3	19310	d2s1	Parnell silty clay loam, 0 to 1 percent slopes	correlated	

The data is then saved to the national server and the legend is “Checked In”.

At the time of “Correlation”, rows will be inserted into the Data Mapunit Certification History table and the Legend Certification History table:

- The Soil Survey Leader will certify the “Quality Control” has been completed.
- And, the MLRA Office will add a second row of data and certify the “Quality Assurance” has been completed.

After Certification, the Mapunit Status is changed to “correlated” and the State Soil Scientist is informed that the data has passed QC and QA and is ready to submit to the Staging Server for release to the Soil Data Mart.

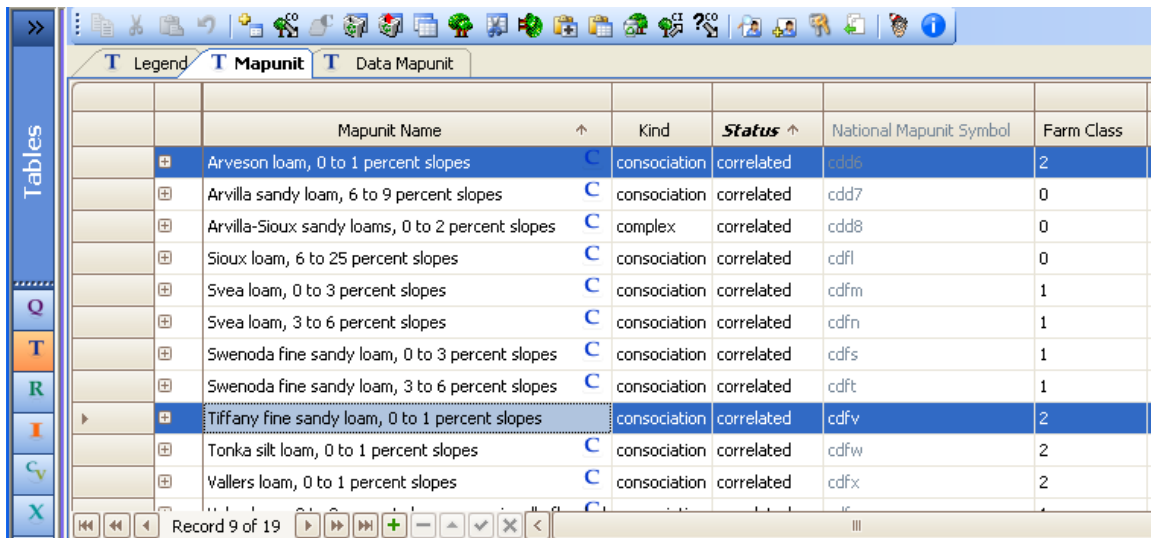
This completes the scenario of creating a new map unit.

Combining Existing Mapunits

This scenario can encompass the:

- combining of two consociations into a complex, or
- combining two similar map units by mapping “out” a closely similar map unit if favor of a dominant map unit, or
- combining similar named map units in various survey legends and replacing with a single map unit for all legends.

Regardless of the scenario, the steps will remain the same. This scenario will combine two existing consociations into a new complex.



Mapunit Name	Kind	Status	National Mapunit Symbol	Farm Class
Arveson loam, 0 to 1 percent slopes	consociation	correlated	cdd6	2
Arvilla sandy loam, 6 to 9 percent slopes	consociation	correlated	cdd7	0
Arvilla-Sioux sandy loams, 0 to 2 percent slopes	complex	correlated	cdd8	0
Sioux loam, 6 to 25 percent slopes	consociation	correlated	cdf1	0
Svea loam, 0 to 3 percent slopes	consociation	correlated	cdfm	1
Svea loam, 3 to 6 percent slopes	consociation	correlated	cdfn	1
Swenoda fine sandy loam, 0 to 3 percent slopes	consociation	correlated	cdfs	1
Swenoda fine sandy loam, 3 to 6 percent slopes	consociation	correlated	cdft	1
Tiffany fine sandy loam, 0 to 1 percent slopes	consociation	correlated	cdfv	2
Tonka silt loam, 0 to 1 percent slopes	consociation	correlated	cdfw	2
Vallers loam, 0 to 1 percent slopes	consociation	correlated	cdfx	2

Note the Arveson and the Tiffany consociations. It is determined that these two map units will be combined into a new complex. The data is already loaded into the selected set.

Step 1 – Create a new Data Mapunit

NASIS User Guide

The screenshot shows the 'Data Mapunit' tab in the NASIS application. The main table has columns: DMU Description, HEL (obsolete), HEL Water (obsolete), HEL Wind (obsolete), Interpretive Focus, and Order of Mapping. A new record is highlighted with a blue background, showing 'New Arveson-Tiffany complex' in the DMU Description column, 'cropland' in the Interpretive Focus column, and 'order 2' in the Order of Mapping column. Below the main table, there are tabs for 'Component', 'Data Mapunit Certification History', 'Data Mapunit Crop Yield', and 'Data Mapunit Text'. The 'Component' tab is active, showing a table with columns: Comp %, Component Name, Local Phase, Taxon Kind, and Major Component. The 'Comp %' column has sub-columns for Low, RV, and High. The 'Component Name' column has a dropdown menu. The 'Local Phase' column has a dropdown menu. The 'Taxon Kind' column has a dropdown menu. The 'Major Component' column has a dropdown menu. The 'Record 65 of 65' indicator is visible at the bottom.

A new record is created in the Data Mapunit table and data is populated.

Step 2 – Copy existing components into New Data Mapunit

Moving to the Arvena Data Mapunit, the Component table is opened and the “Tree” (Parent and child tables) is copied and then pasted into the new Data Mapunit.

The screenshot shows the 'Data Mapunit' tab in the NASIS application. The main table has columns: DMU Description, HEL (obsolete), HEL Water (obsolete), HEL Wind (obsolete), Interpretive Focus, Order of Mapping, and Prod Index. A new record is highlighted with a blue background, showing '5Ar' in the DMU Description column. Below the main table, there are tabs for 'Component', 'Data Mapunit Certification History', 'Data Mapunit Crop Yield', and 'Data Mapunit Text'. The 'Component' tab is active, showing a table with columns: Comp %, Component Name, Local Phase, Taxon Kind, Major Component, and Low. The 'Comp %' column has sub-columns for Low, RV, and High. The 'Component Name' column has a dropdown menu. The 'Local Phase' column has a dropdown menu. The 'Taxon Kind' column has a dropdown menu. The 'Major Component' column has a dropdown menu. The 'Low' column has a dropdown menu. The 'Record 65 of 65' indicator is visible at the bottom.

After pasting in the Arveson, the Tiffany Data Mapunit is opened and the Tiffany is copied and pasted into the new Data mapunit:

NASIS User Guide

The screenshot shows the 'Data Mapunit' table in the NASIS application. A new row is being created for a complex mapunit. The table has columns for Component, Data Mapunit, Certification History, Data Mapunit Crop Yield, Data Mapunit Text, and various attributes like Low, RV, High, Component Name, Local Phase, Taxon Kind, Major Component, Slope Gradient, and Slope Length. The new row is highlighted in pink and shows the following data:

Component	Data Mapunit	Certification History	Data Mapunit Crop Yield	Data Mapunit Text	Low	RV	High	Component Name	Local Phase	Taxon Kind	Major Component	Slope Gradient	Slope Length
85	Arveson				0.0	0.0	1.0			series			

The result is a new Data Mapunit for the Arveson-Tiffany complex. The component percentages will be adjusted to reflect the new complex. In addition all component fields will be reviewed to match the new map unit concept.

Step 3 – Create a New Mapunit

Returning to the Mapunit table, a new row is inserted and the Mapunit table is populated:

The screenshot shows the 'Mapunit' table in the NASIS application. A new row is inserted and the table is populated with the following data:

Mapunit	IASIS Site Name	Mapunit Name	Mapunit Symbol	Mapunit Description	Mapunit Type	Mapunit Category	Mapunit Subcategory	Mapunit Symbol	Mapunit Symbol	Mapunit Symbol	Mapunit Symbol	Mapunit Symbol	Mapunit Symbol
55C Data	Ar	Arveson-Tiffany complex: 0 to 1 percent slopes	M	complex	complex	complex	complex	1gkhs	?	N			
LRA07_Office	7-	Arveson loam, 0 to 1 percent slopes	C	consociation	consociation	consociation	consociation	cdd6	?	M			
LRA07_Office	7-	Tiffany fine sandy loam, 0 to 1 percent slopes	C	consociation	consociation	consociation	consociation	cdfv	?	M			

Step 4 – Link the Old Mapunits to the New Mapunit

The map units must be linked together in order to build a conversion legend – a legend used to identify what map unit was replaced with new symbols. To complete this step, the correlation records from the old map units are copied and pasted into the new map unit.

NASIS User Guide

The screenshot shows the NASIS software interface with the 'Data Mapunit' table selected. The table has columns: DMU Description, Data Mapunit..., Rep D..., Constituent Acres, and Record Last Updated. The 'Data Mapunit' table is expanded, showing a list of DMUs with their descriptions, data mapunit IDs, and constituent acres.

DMU Description	Data Mapunit...	Rep D...	Constituent Acres	Record Last Updated
075Ar	512623	<input checked="" type="checkbox"/>	656	11/02/2009 15:09:59
075Tf	512674	<input checked="" type="checkbox"/>	243	11/02/2009 15:10:12

The 'Correlation' table is also visible, showing a list of DMUs with their descriptions, data mapunit IDs, and constituent acres.

DMU Description	Data Mapunit...	Rep D...	Constituent Acres	Record Last Updated
075Ar	512623	<input checked="" type="checkbox"/>	656	11/02/2009 15:09:59
075Tf	512674	<input checked="" type="checkbox"/>	243	11/02/2009 15:10:12

Step 5 – Link the New Data Mapunit to the New Mapunit

Return to the Data Mapunit table and copy the row of data from the new Data Mapunit. Then paste this into the Correlation table for the new Mapunit.

The screenshot shows the NASIS software interface with the 'Data Mapunit' table selected. The table has columns: DMU Description, HEL (obsolete), HEL Water (obsolete), HEL Wind (obsolete), Interpretive Focus, and Order of Mapping. The 'Data Mapunit' table is expanded, showing a list of DMUs with their descriptions, data mapunit IDs, and constituent acres.

DMU Description	HEL (obsolete)	HEL Water (obsolete)	HEL Wind (obsolete)	Interpretive Focus	Order of Mapping
075Ar					
075Tf					
New Arveson-Tiffany complex				cropland	order 2

The 'Data Mapunit' table is expanded, showing a list of DMUs with their descriptions, data mapunit IDs, and constituent acres.

DMU Description	Data Mapunit...	Rep D...	Constituent Acres	Record Last Updated
075Ar	512623	<input checked="" type="checkbox"/>	656	11/02/2009 15:09:59
075Tf	512674	<input checked="" type="checkbox"/>	243	11/02/2009 15:10:12

Then pasting the record into the Correlation table,

NASIS User Guide

Mapunit Name	Kind	Status	National Mapunit Symbol	Farm Class	Mapunit NASIS Site
Arveson - Tiffany complex, 0 to 1 percent slopes	complex	provisional	1gkhs	2	NSSC Data

DMU Description	Data Mapunit...	Rep D...	Constituent Acres	Record
075Ar	512623	<input checked="" type="checkbox"/>	656	11/02/2009
075Tf	512674	<input checked="" type="checkbox"/>	243	11/02/2009
New Arveson-Tiffany complex	554660	<input checked="" type="checkbox"/>		11/02/2009

The Correlation table for the new map unit now contains the correlation records from the two map units that it will eventually replace in addition to the new Data Mapunit created for the complex. The “constituent acres” identifies the acres that each former map unit contributed to the new map unit.

Step 6 – Document the Mapunit

All of the mapunits are documented to identify the changes.

Date	Author	Correlation Kind	Correlation Event	Historical Name	Status	Text Entry	Record Last Updated
11/02/2009	Paul R. Finnell	status change - added	initial field review	provisional			
12/18/2006	Ernie Jensen	name change	correlation amend...	Arveson loam	correlated		
12/18/2006	Fred Aziz	name change	correlation amend...	Tiffany fine sandy loam, 0 to 1 percent slopes	correlated		

When complete, each map unit will have a record in the Mapunit History table. The new map unit will document the map units that were combined to create the complex. The old map units will document why the map unit was combined and to what map unit it was combined into.

Remember that NASIS is a read only database and the existing map units must be “Checked Out” in order to insert a new record in the Mapunit History table.

Step 7 – Link the new Mapunit to the Legend

Set the new Data Mapunit to be the Representative DMU and “uncheck” the old DMU

Step 8 – Certification

Before the new map unit is changed to a status of “correlated” and before released to the State Soil Scientist for publication, the data must be certified. Return to the Data Mapunit object and open the “Data Mapunit Certification History” child table:

The screenshot shows the 'Data Mapunit' tab selected in the application. The 'Data Mapunit Certification History' sub-tab is active, displaying a table with the following data:

Reviewer	Certification Date	Certification Kind	DMU Certification Status	Certification Text	Record Last Update
N Jensen, Earnie	11/11/2009	quality assurance	certified, all components	explanation of...	11/02/2009 15:50:3
N Bott, Wade	11/02/2009	quality control	certified, all components	explanation of the certification	

The table is part of a larger form with tabs for 'Component', 'Data Mapunit Certification History', 'Data Mapunit Crop Yield', and 'Data Mapunit Text'. The 'Data Mapunit' tab is selected, and the 'Data Mapunit Certification History' sub-tab is active. The table shows two certification records. A text box for 'Certification Text' is visible on the right side of the table.

The Soil Survey Leader and the Soil Data Quality Specialist are required to certify the Data Mapunit.

Then, return to the Legend Object and open the Legend Certification History table and repeat the process:

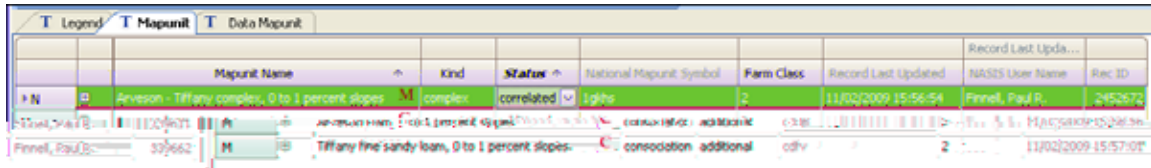
The screenshot shows the 'Legend' tab selected in the application. The 'Legend Certification History' sub-tab is active, displaying a table with the following data:

Reviewer	Certification Date	Certification Kind	Legend Certification Status	Certification Text	Record Last Update
N Jensen, Earnie	11/02/2009	quality control	certified	certifying the ...	11/02/2009 15:53:5
M Bott, Wade	07/15/2009	quality assurance	certified	certifying the data is ready to submit for publication	

The table is part of a larger form with tabs for 'Legend Mapunit', 'Legend Area Overlap', 'Legend Certification History', 'Legend Export Certification History', and 'Legend Text'. The 'Legend' tab is selected, and the 'Legend Certification History' sub-tab is active. The table shows two certification records. A text box for 'Certification Text' is visible on the right side of the table.

Step 9 – Modify the Mapunit Status

Return to the Mapunit Object and modify the mapunit status to reflect the correlation – the new map unit is now “Correlated” and the old map units are set to “Additional”:



	Mapunit Name	Kind	Status	National Mapunit Symbol	Firm Class	Record Last Updated	NASIS User Name	Rec ID
N	Arteson - Tiffany complex, 0 to 1 percent slopes	complex	correlated	1g1hs	2	11/02/2009 15:56:54	Finnell, Paul R.	2452672
M	Tiffany fine sandy loam, 0 to 1 percent slopes	consociation	additional	cdhr	2	11/02/2009 15:57:07		

Notice the “Record Last Updated” and “NASIS User Name” fields. These fields are populated each time the record is modified. Each record in the database now records the last person to edit and the data and time of the edit.

The “Combining Existing Mapunits” scenario is completed.

Splitting Map Units

This scenario is a reverse of the previous scenario. The steps in splitting a mapunit are to

Step 1 – Create new Data Mapunits

Create new Data Mapunits and edit to reflect the new map unit concepts. This can be accomplished by copying the original DMU and pasting it to create copies. Then each copy is modified to reflect the new map unit concept of the split.

The screenshot displays the NASIS Data Mapunit interface. The top navigation bar includes 'Legend', 'Mapunit', and 'Data Mapunit'. The main window shows a list of mapunits on the left and a detailed view of a selected mapunit on the right.

The selected mapunit is '075BdB'. Its details include:

- DMU Description: 075BdB
- Interpretive Focus: (empty)
- Order of Mapping: (empty)
- Prod Index: (empty)
- DMU NASIS Site: MLRA07_Office
- NASIS Group: 7-8 Devils Lake, Nor...
- Object Label: 05/15/2008

Below the mapunit details, there are tabs for 'Component', 'Data Mapunit Certification History', 'Data Mapunit Crop Yield', and 'Data Mapunit Text'. The 'Component' tab is active, showing a table of components.

Component		Comp %			Component Name	Local Phase	Taxon Kind	Major Component	Slope Gradient		
		Low	RV	High					Low	RV	High
			50		Barnes		series	<input checked="" type="checkbox"/>	3.0	4.0	6.0
			30		Buse		series	<input checked="" type="checkbox"/>	3.0	5.0	6.0

Below this, there are two new mapunits created from the original:

- 075BdB New Barnes Component**: This mapunit has a component 'Barnes' with a value of 85 and a component 'Buse' with a value of 10. The 'Buse' component is highlighted in blue.
- 075BdB New Buse Component**: This mapunit has a component 'Buse' with a value of 85 and a component 'Barnes' with a value of 10. The 'Barnes' component is highlighted in blue.

Step 2 – Populate the Correlation Table

Return to the Mapunit table.

Check out the original map unit.

Enter the new Data Mapunits into the Correlation table of the original Mapunit and set the new Rep DMU to unchecked.

T Legend		T Mapunit		T Data Mapunit		
		Mapunit Name ↑	Kind	Status ↑	National Mapunit Symbol	Farm Class
► M		Barnes-Buse loams, 3 to 6 percent slopes	complex	correlated	cddh	1
<div>Correlation</div> <div>Mapunit History</div> <div>Mapunit Text</div> <div>Mapunit USFS Ecological Classification</div> <div>Mapunit USFS Interpretation</div>						
Data Mapunit						
		DMU Description ↑	Data Mapuni... ↑	Rep D... ↑	Constituent Acres	
# N		075BdB New Barnes Component	554661	<input type="checkbox"/>		
N		075BdB New Buse Component	554662	<input type="checkbox"/>		
E		075BdB	512633	<input checked="" type="checkbox"/>	3235	
<div><</div> <div> </div>						

Step 3 – Document the Mapunit

Move to the Mapunit History table and document the map unit. By doing so now, before copying and pasting the map unit, the new map units will retain the original documentation.

Correlation Mapunit History Mapunit Text Mapunit USFS Ecological Classification Mapunit USFS Interpretation						
	Date ↓	Author	Correlation Kind	Correlation Event	Historical Name ↑	Status ↑
I N	11/02/2009	Paul R. Finnerl	status change - added	progress field review	Barnes-Buse loams, 3 to 6 percent slopes	correlated

Step 4 - Create the new Mapunits

This is best done by copying the original map unit and pasting it twice to represent the split. By copying the original map unit, the correlation records are retained. Since the Correlation table now contains the new DMU records the original mapunit will be linked to the new mapunits. Change the Mapunit Name and set the mapunit Status to "provisional" on the new map units.

NASIS User Guide

The screenshot displays the NASIS software interface with two main tables: 'Mapunit' and 'Data Mapunit'.

Mapunit Table:

Mapunit Name	Kind	Status	National Mapunit Symbol	Farm Class
Barnes loam, 3 to 6 percent slopes	M	provisional	1gkht	1

Data Mapunit Table:

DMU Description	Data Mapuni...	Rep D...	Constituent Acres
075BdB	512633	<input type="checkbox"/>	3235
075BdB New Buse Component	554662	<input type="checkbox"/>	
075BdB New Barnes Component	554661	<input checked="" type="checkbox"/>	

Annotations in the image include:

- New:** Points to the 'Barnes loam, 3 to 6 percent slopes' mapunit record.
- Original:** Points to the '075BdB' data mapunit record.
- New DMU:** Points to the '075BdB New Barnes Component' data mapunit record.
- Original DMU:** Points to the '075BdB' data mapunit record in a separate window.

Step 5 – Copy the Provisional Mapunits

Copy the provisional map units and paste into the appropriate Legend Mapunit table. Using the Ctrl button and the left click, Highlight both mapunit records then copy selected trees:

NASIS User Guide

Legend Mapunit Data Mapunit Copy Selected Trees

	Mapunit Name	Kind	Status	National Mapunit Sy	
N	Barnes loam, 3 to 6 percent slopes	M	consociation	provisional	lgkht

Correlation Mapunit History Mapunit Text Mapunit USFS Ecological Classification Mapunit USFS Inte

Data Mapunit

	DMU Description	Data Mapuni...	Rep D...	Constitu
N	075BdB	512633	<input type="checkbox"/>	
N	075BdB New Buse Component	554662	<input type="checkbox"/>	
N	075BdB New Barnes Component	554661	<input checked="" type="checkbox"/>	

M Barnes-Buse loams, 3 to 6 percent slopes C complex correlated cddh

Correlation Mapunit History Mapunit Text Mapunit USFS Ecological Classification Mapunit USFS Inte

Data Mapunit

	DMU Description	Data Mapuni...	Rep D...	Constitu
N	075BdB New Barnes Component	554661	<input type="checkbox"/>	
N	075BdB New Buse Component	554662	<input type="checkbox"/>	
E	075BdB	512633	<input checked="" type="checkbox"/>	

provisional lgkht

N Barnes loam, 3 to 6 percent slopes M consociation

Classification Mapunit USFS Inte Correlation Mapunit History Mapunit Text Mapunit USFS Ecological

Data Mapunit

ation	Data Mapuni...	Rep D...	Constitu
	512633	<input type="checkbox"/>	
ponent	554661	<input type="checkbox"/>	
nent	554662	<input checked="" type="checkbox"/>	

DMU Descrip

N	075BdB
N	075BdB New Barnes Com
N	075BdB New Buse Compo

Step 6 – Link the New Provisional Mapunits into the Legend

After being copied, the new map units are then pasted into the Legend. The publication Mapunit Symbol and the Total Acres are then added to the table.

T Legend

T Mapunit

T Data Mapunit

Step 7 – Certification of DMU and Legend

Before the new map unit is changed to a status of “correlated” and before released to the State Soil Scientist for publication, the data must be certified. Return to the Data Mapunit object and open the “Data Mapunit Certification History” child table:

The Soil Survey Leader and the Soil Data Quality Specialist are required to certify the Data Mapunit.

N	075BdB New Barne...					
	<div>Component</div> <div>Data Mapunit Certification History</div> <div>Data Mapunit Crop Yield</div> <div>Data Mapunit Text</div>					
	Reviewer					
	NASIS User Name	Certification Date	Certification Kind	DMU Certification Status	Certification Text	
N	Jensen, Earnie	11/02/2009	quality control	certified, all components		
N	Bott, Wade	07/15/2009	quality assurance	certified		
N	075BdB New Buse ...					
	<div>Component</div> <div>Data Mapunit Certification History</div> <div>Data Mapunit Crop Yield</div> <div>Data Mapunit Text</div>					
	Reviewer					
	NASIS User Name	Certification Date	Certification Kind	DMU Certification Status	Certification Text	
N	Jensen, Earnie	11/02/2009	quality control	certified, all components		
N	Bott, Wade	07/15/2009	quality assurance	certified		

NASIS User Guide

Then, return to the Legend Object and open the Legend Certification History table and repeat the process:

Area							
	Area Type NASIS Site Name	Area Type Name	Area Symbol	Area Name ↑	Area Acres	MLRA Office	Legend Description
M	NASC Pangaea	Non-MLRA Soil Survey Area	ND075	Renville County, North Dak...	571300	bismarck, nd	Detailed Soil Map Legend

Legend Certification History						
	Reviewer	Certification Date ↓	Certification Kind	Legend Certification Status	Certification Text	Record Last Update
N	Jensen, Earnie	11/02/2009	quality control	certified	certifying the ...	11/02/2009 15:53:5
M	Bott, Wade	07/15/2009	quality assurance	certified	certifying the data is ready to submit for publication	

Step 8 – Modify the Mapunit Status

Return to the Mapunit Object and modify the mapunit status to reflect the correlation – the new map unit is now “Correlated” and the old map units are set to “Additional”:

		Mapunit Name ↑	Kind	Status ↑	
N	+	Barnes loam, 3 to 6 percent slopes	M consociation	correlated	1gkht
M	+	Barnes-Buse loams, 3 to 6 percent slopes	C complex	additional	cddh
N	+	Buse loams, 3 to 6 percent slopes	M consociation	correlated	1gkhu

Legend		Mapunit		Data Mapunit				
		Area						
		Area Type NASIS Site Name	Area Type Name	Area Symbol	Area Name ↑	Area Acres	MLRA Office	Legend
M		NSSC Pangaea	Non-MLRA Soil Survey Area	ND075	Renville County, North Dak...	571300	bismarck, nd	Detailed S
		Legend Mapunit	Legend Area Overlap	Legend Certification History	Legend Export Certification History	Legend Text		
		Mapunit						
		Mapunit Symbol ↑	Total Acres	National Mapunit Symbol	Mapunit Name	Mapunit Status		
		N 2156	4560	1gkht	Barnes loam, 3 to 6 percent slopes	correlated	1	
		N 2157	5640	1gkhu	Buse loams, 3 to 6 percent slopes	correlated	1	
		E BdC	2398	cddj	Barnes-Buse loams, 6 to 9 percent slopes	correlated		

The “Splitting Existing Mapunits” scenario is completed.

Chapter 14: Project Management

The Project Object is used to manage soil survey operations. The Project Object contains the fields previously found in the Soil Survey Scheduler information previously located in the Legend Object.

Both traditional and update soil survey operations are now managed within the Project Object. Traditional soil surveys are managed in the Project Object as discussed in Chapter 8 in the examination of the Project Object. This chapter will focus on the development of the Project Plan for use in the update soil surveys. The objective is to explain how the Project Object is populated and managed for completion of update projects.

Update project plans are created after the completion of the soil surveys evaluations. The soil survey office staff develops a list of prioritized issues to be addressed that are submitted to the Board of Directors for concurrence and approval. The approved projects are then entered in NASIS. NASIS is used to create and manage the project plans. The following guidelines are provided by the Director of the Soil Survey Division to explain the concept of update project planning. Update Project plans:

1. are intended to “improve” the original product,
2. assist in the goal of developing a seamless national soil survey product,
3. will follow a project naming convention in which the prefix is the MLRA in which the work is completed (e.g. MLRA 55 ...);
4. are defined by map units;
5. will collect sufficient information to fully populate the NASIS database,
6. have acreage goals based on the total acres of map units within the project
7. are completed within an annual basis;
 - a. Multi-year projects will be divided into annual reportable items
 - b. Milestones should be clearly identified to document status;
8. will report acres after data, spatial and/or tabular, is submitted to the Soil Data Mart;
9. will focus on the defined project and defined completion date. Any “scope creep” will be developed as a future project.

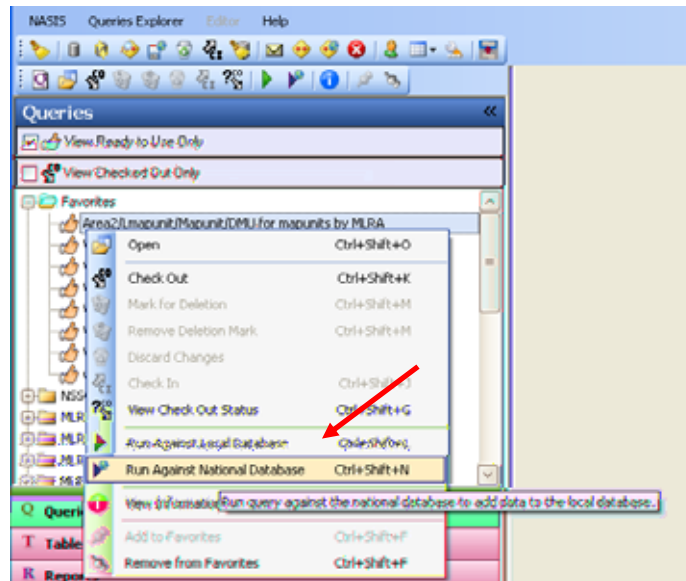
The map units from the existing published soil surveys will be the foundation of the project. The project plan will be used to manage the correlation of the survey map units into MLRA map unit(s). This correlation process will follow existing correlation protocol of map unit status migration from “provisional” to “approved” to “correlated”, and the status of “additional”.

The following scenarios are designed as examples of populating the project plan in NASIS. The example projects contained in this scenario use the similar projects created from the long range plan found in NSSH 608 exhibit 3. The first scenario is a water table study that benefits multiple map units across the MLRA. The second scenario will correlate a new MLRA map unit and replace the existing published map units.

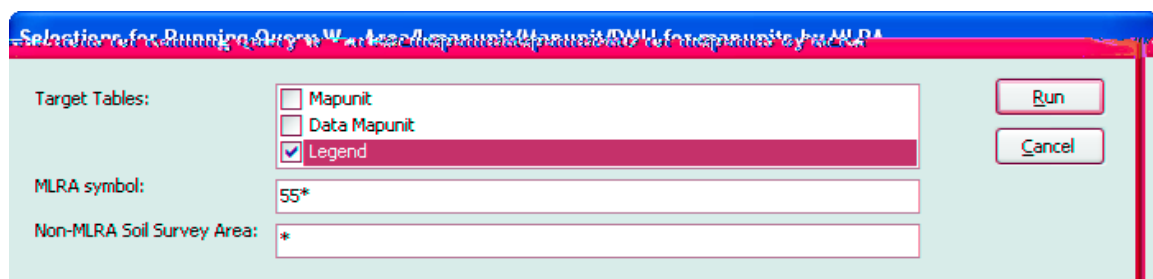
Populate the Local Database with MLRA data

Before entering data in the Project Object, data must be loaded into the NASIS local database. Clear the selected set and populate the local database with the official data (legends, map units and data mapunits) for the MLRA.

1. On the **NASIS** menu, select **Clear Selected Set**. This function clears the entire selected set and starts a new selected set.
2. Click the **Queries Explorer** tab, and highlight the national query **"Area2LmapunitMapunitDMU for mapunits by MLRA"**. This query loads map units populated in the Legend Mapunit Overlap table for the given MLRA.
3. Right-click on the query and choose **"Run Against National Database"**.



Choose **Legend** as target table. (Remember, highest level table for a national query). Enter the MLRA of choice and use a wildcard to load from all official legends.



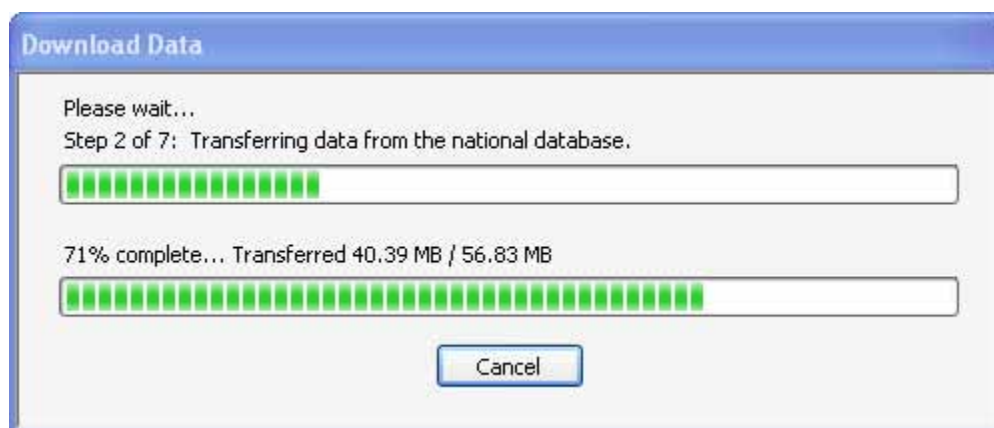
The user may choose to select the MLRA in which they work. This scenario will load all Legend, Mapunit, Data Mapunit, linked Pedon and linked Site data from MLRA 55.

NASIS User Guide

- The results appear in the “Local Database Setup” tab. The status identifies the data available in the National database that is available for downloading.

Project	Technical Soil Service	Legend	Mapunit	Data Mapunit	Site	Pedon	Transect	Site Association	Distribution Metadata	System	Down Group
Location	Area Type	NASIS Site Name	Area Type Name	Area Symbol	Area Name	Area Acres	Survey Status	NASIS Site Name	NASIS Group Name	Updated Last Updated	
National	NSSC Pangora	Non-PLRA Soil Survey Area	ND007	Eddy County, North Dakota	412300	extensive-revision	PLRA07_Office	SSO-Dewils Lake (L2)ND	10/26/2008 12:52:18		
National	NSSC Pangora	Non-PLRA Soil Survey Area	ND005	Benson County, North Dakota	905780	extensive-revision	PLRA07_Office	SSO-Dewils Lake (L2)ND	11/21/2008 09:19:43		
National	NSSC Pangora	Non-PLRA Soil Survey Area	ND003	Nelson County, North Dakota	648320	extensive-revision	PLRA07_Office	SSO-Dewils Lake (L2)ND	11/21/2008 09:28:08		
National	NSSC Pangora	Non-PLRA Soil Survey Area	ND001	Sargent County, North Dakota	555200	extensive-revision	PLRA07_Office	SSO-Dewils Lake (L2)ND	04/22/2009 11:55:11		
National	NSSC Pangora	Non-PLRA Soil Survey Area	ND103	Wells County, North Dakota	826500	extensive-revision	PLRA07_Office	SSO-Dewils Lake (L2)ND	02/12/2009 05:47:36		
National	NSSC Pangora	Non-PLRA Soil Survey Area	ND046	LaMoure County, North Dakota	738000	extensive-revision	PLRA07_Office	SSO-Dewils Lake (L2)ND	02/12/2009 05:47:36		
National	NSSC Pangora	Non-PLRA Soil Survey Area	ND016	Burleigh County, North Dakota	1067500	extensive-revision	PLRA07_Office	SSO-Bismarck (L2)ND	06/18/2009 09:42:28		
National	NSSC Pangora	Non-PLRA Soil Survey Area	ND099	Walsh County, North Dakota	828000	extensive-revision	PLRA07_Office	SSO-Fargo (L2)ND	04/22/2009 11:04:40		
National	NSSC Pangora	Non-PLRA Soil Survey Area	ND101	Ward County, North Dakota	1315300	extensive-revision	PLRA07_Office	SSO-Dewils Lake (L2)ND	02/12/2009 05:47:36		
National	NSSC Pangora	Non-PLRA Soil Survey Area	ND075	Ramona County, North Dakota	571300	extensive-revision	PLRA07_Office	SSO-Dewils Lake (L2)ND	02/12/2009 05:47:36		
National	NSSC Pangora	Non-PLRA Soil Survey Area	ND067	Pembina County, North Dakota	717400	extensive-revision	PLRA07_Office	SSO-Fargo (L2)ND	06/09/2009 13:13:25		
National	NSSC Pangora	Non-PLRA Soil Survey Area	ND097	Towner County, North Dakota	551900	extensive-revision	PLRA07_Office	SSO-Fargo (L2)ND	04/22/2009 11:06:56		
National	NSSC Pangora	Non-PLRA Soil Survey Area	ND058	Hazen County, North Dakota	1499300	extensive-revision	PLRA07_Office	SSO-Bismarck (L2)ND	02/12/2009 05:47:36		
National	NSSC Pangora	Non-PLRA Soil Survey Area	ND069	Pierce County, North Dakota	692600	extensive-revision	PLRA07_Office	SSO-Dewils Lake (L2)ND	08/17/2008 15:11:50		
National	NSSC Pangora	Non-PLRA Soil Survey Area	ND035								

- Choose “Accept” to retrieve the data and populate the local database. This process will take about 15 to 45 minutes. This is a very long and very processor intensive process. The required time is dependent upon the speed of the network, the PC processor speed and the amount of RAM on the local computer.



NASIS User Guide

6. When completed, the local database setup will appear. It now identifies the data populated into the Local Database. This process is not expected to be repeated unless the local database is cleared.

Run queries against the national database to select more data.

Location	Area Type NASIS Site Name	Area Type Name	Area Symbol	Area Name	Area Acres
Local	NSSC Pangaea	Non-MLRA Soil Survey Area	ND027	Eddy County, North Dakota	412300
Local	NSSC Pangaea	Non-MLRA Soil Survey Area	ND005	Benson County, North Dakota	920700
Local	NSSC Pangaea	Non-MLRA Soil Survey Area	ND063	Nelson County, North Dakota	648320
Local	NSSC Pangaea	Non-MLRA Soil Survey Area	ND081	Sargent County, North Dakota	555200
Local	NSSC Pangaea	Non-MLRA Soil Survey Area	ND103	Wells County, North Dakota	826500
Local	NSSC Pangaea	Non-MLRA Soil Survey Area	ND045	LaMoure County, North Dakota	738000
Local	NSSC Pangaea	Non-MLRA Soil Survey Area	ND015	Burleigh County, North Dakota	1067700
Local	NSSC Pangaea	Non-MLRA Soil Survey Area	ND099	Walsh County, North Dakota	828000
Local	NSSC Pangaea	Non-MLRA Soil Survey Area	ND101	Ward County, North Dakota	1315300
Local	NSSC Pangaea	Non-MLRA Soil Survey Area	ND075	Renville County, North Dakota	571300
Local	NSSC Pangaea	Non-MLRA Soil Survey Area	ND067	Pembina County, North Dakota	717400
Local	NSSC Pangaea	Non-MLRA Soil Survey Area	ND097	Traill County, North Dakota	551900
Local	NSSC Pangaea	Non-MLRA Soil Survey Area	ND055	McLean County, North Dakota	1489300
Local	NSSC Pangaea	Non-MLRA Soil Survey Area	ND069	Pierce County, North Dakota	692600
Local	NSSC Pangaea	Non-MLRA Soil Survey Area	ND035	Grand Forks County, North Dakota	921700
Local	NSSC Pangaea	Non-MLRA Soil Survey Area	ND009	Bottineau County, North Dakota	1086500
Local	NSSC Pangaea	Non-MLRA Soil Survey Area	ND025	Dunn County, North Dakota	1332600

Record 1 of 104

Status Messages

Preparing query "W - Area/Lmapunit/Mapunit/DMU for mapunits by MLRA"...

Running national query for target table "Legend"...

Number of data objects found:

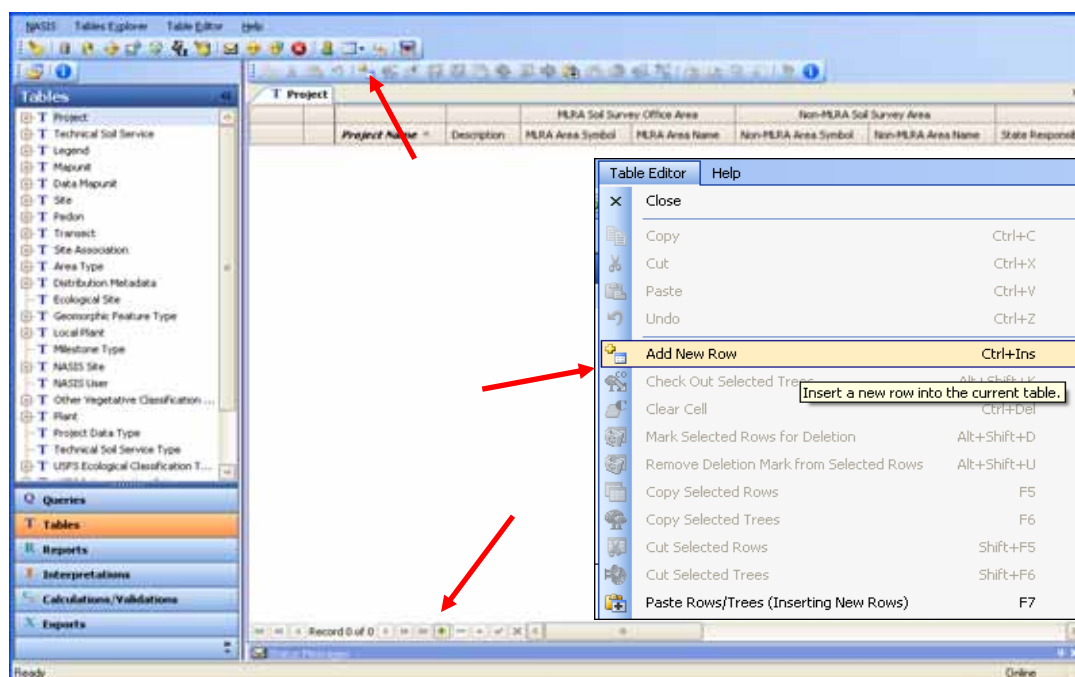
- Legend: 104
- Mapunit: 15484
- Data Mapunit: 15642
- Site: 387
- Pedon: 387
- Transect: 4

Note the data retrieved from the national database

Scenario 1 – Water Table Study

Step 1 – Create the Project

1. From the Table Explorer panel, open the Project table. This first Project will deal with a Water Table study.
2. Insert a row into the table using the tool bar icons or the Table Editor menu.



3. Populate the project name. The project name begins with the MLRA followed by a space and a dash and a space. In this instance the name is “MLRA 55 - ...”. Refer to the list of projects for this MLRA. In this scenario, seven projects have been identified and created.

Project						
Project Name			MLRA Soil Survey Office Area			
		Description	MLRA Area Symbol	MLRA Area Name	State Responsible	Digitizing Unit
M	MLRA 55 - Water table study - lower relief till plains	Justification: Know 7-8		Devils Lake, North Dakota	nd	montana

4. The description column is used as the “executive summary” of the project. Provide, at a minimum, the “What, Where and Why” justifying the project. This is a text field and information can be copied from other files and pasted into this field.

NASIS User Guide

MLRA Soil Survey Office Area					
Project Name	Description	MLRA Area Symbol	MLRA Area Name	State Responsible	Digitizing Unit
MLRA SS - Water table study - lower relief till plains	Justification: Knowledge of soil saturation is an important property of soils in MLRA SSA 6-55B. Information derived from saturation is used for hydric soil determinations, productivity estimates, and engineer practices, including septic field evaluations. Recognizing data voids and collecting appropriate information about soil saturation, in an efficient manner, is a priority for the soil survey update programs in this area. BRIS tubes (Indicator of Reduction in Soils) are a relatively inexpensive and mobile tool which can be used to collect soil saturation data. The use of BRIS tubes is a priority for the soil survey update programs in this area. The use of BRIS tubes is a priority for the soil survey update programs in this area. The use of BRIS tubes is a priority for the soil survey update programs in this area.	7-8	Devils Lake, North Dakota		non-ave

- The “MLRA Soil Survey Office Area” band contains two columns connected with a choice list. Choose either the office symbol or name that will be working on the specific project.

MLRA Soil Survey Office Area					
Project Name	Description	MLRA Area Symbol	MLRA Area Name	State Responsible	Digitizing Unit
MLRA SS - Water table study - lower relief till plains	Justification: 7-8	7-8	Devils Lake, North Dakota		

- The “Non-MLRA Soil Survey Area” band is designed for traditional soil surveys. Since this scenario is an update project, this band is not populated and can be hidden.

Non-MLRA Soil Survey Area					
Project Name	Description	MLRA Area Symbol	MLRA Area Name	Non-MLRA Area Symbol	Non-MLRA Area Name
MLRA SS - Water table study - lower relief till plains	Justification: 8-5	Grants, New Mexico		ND071	Ramsey County, North...

- Populate the State Responsible for the project.

MLRA Soil Survey Office Area					
Project Name	Description	MLRA Area Symbol	MLRA Area Name	State Responsible	Digitizing Unit
MLRA SS - Water table study - lower relief till plains	Justification: 7-8	Devils Lake, North Dakota			

- Many of the remaining columns deal with items used to track traditional soil surveys. In most instances these columns will not be pertinent to an update project.

Project Name	English Edit Site	Compilation Funding Year	Digital Map Finishing Site	Map Finish Method	SSURGO Initiative?	Digitizing Funding Year
MLRA SS - Water table study - lower relief till plains					<input type="checkbox"/>	

Step 2 – Identify Map Unit(s)

Method 1: Using choice list

1. Open the child tables using the plus sign. The first “child” table to populate is the Project Mapunit table. The map units associated with the project are identified based on the completed soil survey evaluations.
2. Insert a new row into the Project Mapunit table. The map unit can be chosen from either the National Mapunit Symbol or the Mapunit Name. This choice list is based on the data within the Local Database. This is the reason why the first step is to populate the Local Database with data from the MLRA.

Project Name	Description	MLRA Area Symbol	MLRA Area Name	State Responsible
Project Name				

National Mapunit Symbol	Mapunit Name	Mapunit Status	Record Last
1qb3x			
MLRA07_Office	1qb3y	Barnes-Svea loams, 3 to ...	correlated
MLRA07_Office	1qb3z	Barnes-Buse-Langhei loa...	correlated
MLRA07_Office	1qb40	Barnes-Buse-Langhei loa...	correlated
MLRA07_Office	1qb41	Buse-Barnes loams, 15 to ...	correlated
MLRA07_Office	1qb42	Barnes-Buse loams, 3 to ...	correlated
MLRA07_Office	1qb43	Barnes-Buse-Barnell com	correlated

3. Choose those map units directly associated with the project. Specifically, those map units in which the work will be accomplished. In this Water Table project, the work will benefit many acres of same named map units. However, the water table study will be confined to specific map units within the MLRA. Only those map units in which the instrumentation is installed are identified for the project.

POINT OF ORDER:

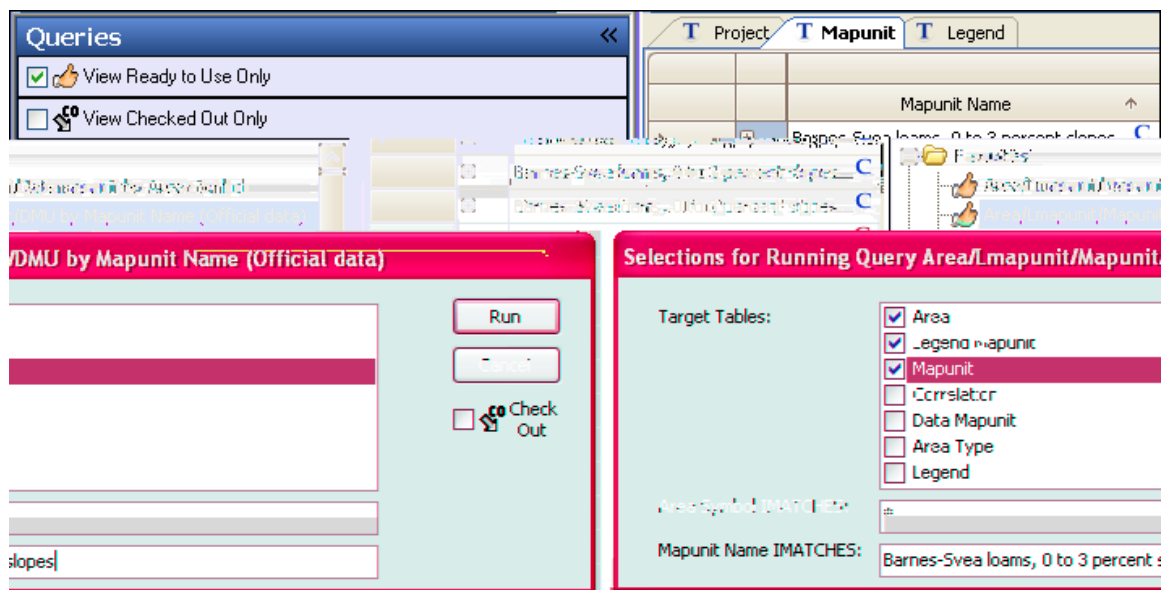
The map units for the Project Mapunit choice lists come from the Mapunit table. The Mapunit table does not identify the survey name or the survey publication map unit symbol. The user must be familiar with the National Mapunit Symbols for the project map units.

It may be necessary to load the map units into the Legend Mapunit table to identify the specific mapunits by survey area and to identify its national map unit symbol. The following method is a slight digression to explain how the map units can be queried into the selected set. Once the map units are in the Mapunit table, they can be copied and pasted into the Project Mapunit table.

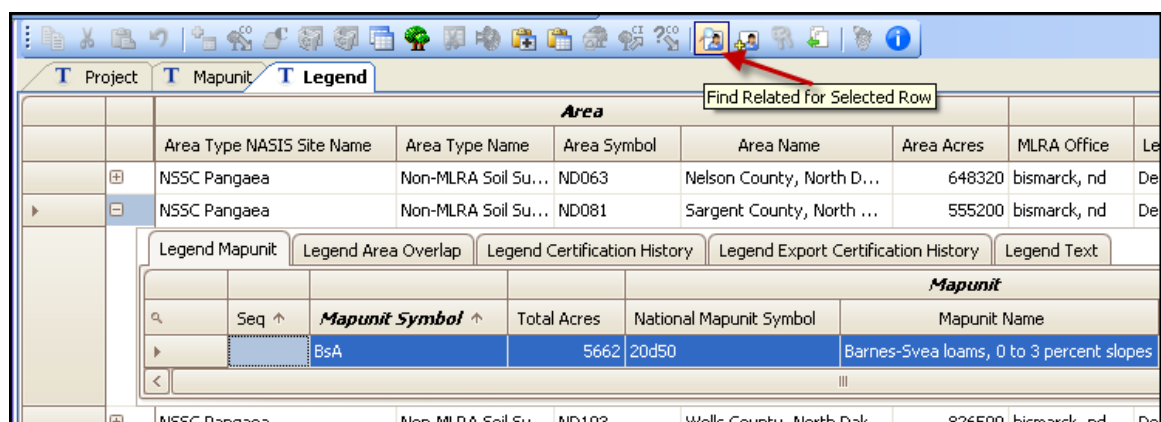
NASIS User Guide

Method 2: Copy and Paste from the Mapunit table

4. The Water Table “project”, based on the project description, is focused on the Barnes soils. The study will install instrumentation on specific “Barnes-Svea loams, 0 to 3 percent slopes” map units within specific counties. Using a National query, the map units by this name can be added to the selected set.

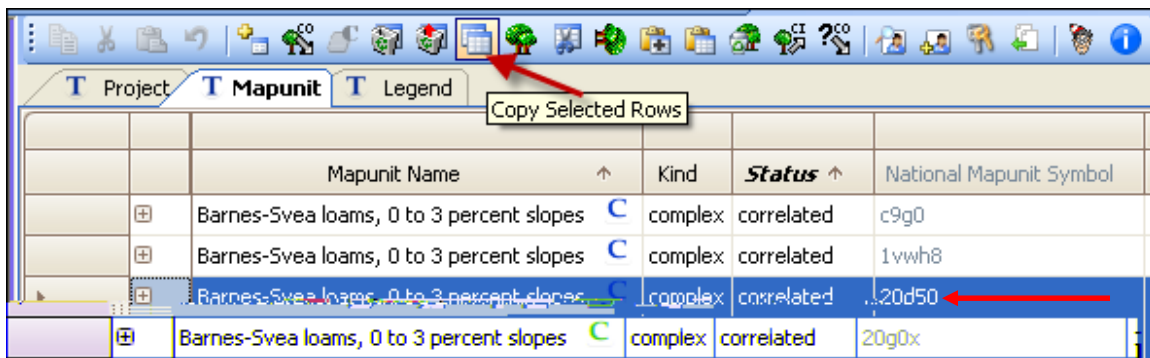


5. The Legend Mapunit table is opened to the specific survey areas and the specific map unit for the Project. The Legend table identifies the survey area and the Legend Mapunit table identifies the map unit publication Mapunit Symbol, its National Mapunit Symbol and its acreage within the specific legend.

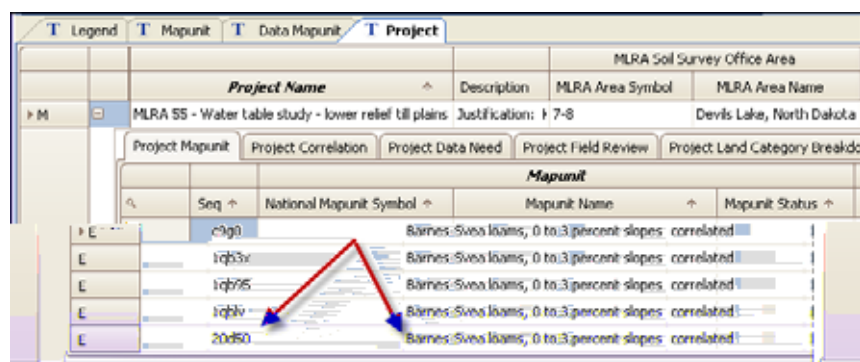


6. Now that the National Mapunit Symbol (20d50) is identified, the mapunit can be selected from the choice list in the Project Mapunit table.
7. Or, the Find Related function can be used to find the specific map unit in the Mapunit table. Then, in the Mapunit table, copy the map unit and paste the map unit into the Project Mapunit table.
8. In this method, the map unit is located in the Mapunit table. The mapunit is then copied from the Mapunit table:

NASIS User Guide



9. Then pasted into the Project Mapunit table:



Step 3 – Populate the remaining child tables

Project Staff

The Project Staff is the first table to populate. Notice, in the image below, that NASIS 6 now has "type ahead" functionality and as the list is narrowed, staff can be chosen. The staff members working on the specific project are added to this table.

MLRA Soil Survey Office Area			
Project Name	Description	MLRA Area Symbol	MLRA Area Name
MLRA 55 - Aberdeen on floodplains	Aberdeen is a lak...	7-8	Devils Lake, North Dakota
MLRA 55 - Barnes and Buse 3 to 6 percent slo...	Review the map u...	7-8	Devils Lake, North Dakota
MLRA 55 - Evaluating Current Productivity In...	Justification: The nu		
MLRA 55 - Vallers saline - Parnell map unit	Document these ...	7-8	Devils Lake, North Dakota
MLRA 55 - Water table study - lower relief till ...	Justification: Knowle	7-8	Devils Lake, North Dakota

Project Staff Member			
Seq	NASIS User Name	Record Last Updated	NASIS User Name
1	Finnell, Jennifer	11/16/2009 13:18:19	Finnell, Paul R.

Project Mapping Goal

After the staff personnel are populated, the Project Mapping Goal table is populated. The goal is obtained by summing the acres of the Project mapunits. And the goals are assigned by personnel. If only one person is assigned to the project then all acres are assigned. However, if there are multiple staff members then goals will be split and assigned.

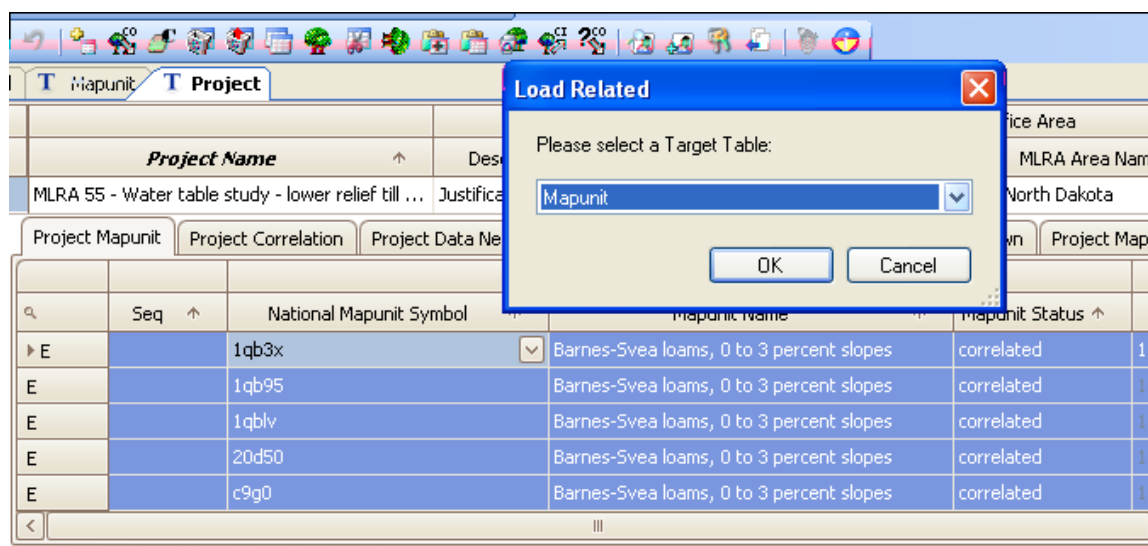
Fiscal Year	Initial NRCS Acres	Initial Cooperator Acres	Update NRCS Acres Goal	Update Cooperator Acres Goal	NASIS User Name
2010			133404		Finnell, Paul R.

This Project "Goal" is summed from the map unit acreage values found in the Legend Mapunit table. If the map units are in the Legend Mapunit table then the acres can be manually tallied and populated into the Project Mapping Goal table.

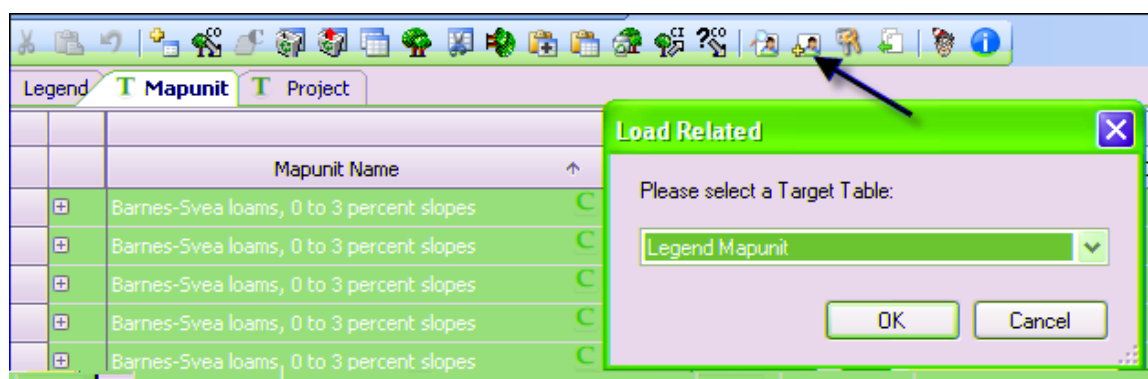
Loading mapunits in the Legend Mapunit table from the Project Mapunit table

This is a digression to explain database relationships and the Load Related function for the purpose of gathering the total map unit acres. If the map units are entered in the Project Mapunit table, but are not loaded into the Mapunit table, then the map units can be loaded into the Mapunit table using the “Load Related” function. In this example, the map units are populated in the Project Mapunit table.

- The rows are highlighted and from the Table Editor menu, the “Load Related for Selected Rows” is chosen and the Mapunit table is chosen from the choice list.



- Then in the Mapunit table, once again the rows are highlighted and the “Load Related for Selected Rows” is chosen. The Legend Mapunit table is chosen from the choice list.



NASIS User Guide

- Then the map unit acres for each legend are now summed to identify the project acre goals.

T Legend							T Mapunit	T Project
Symbol	Area Name	Area Acres	MLRA Office	Legend Description	Survey Status	MOU Sig		
	Nelson County, North Dakota	648320	bismarck, nd	Detailed Soil Map Legend (Update)	extensive revision	12/15/19		
Legend Mapunit Legend Area Overlap Legend Certification History Legend Export Certification History Legend Text								
Mapunit								
Mapunit Symbol	Total Acres	National Mapunit Symbol	Mapunit Name	Mapunit Status				
F143A	5637	1qblv	Barnes-Svea loams, 0 to 3 percent slopes	correlated				
	Sargent County, North Dakota	555200	bismarck, nd	Detailed Soil Map Legend	extensive revision			
Legend Mapunit Legend Area Overlap Legend Certification History Legend Export Certification History Legend Text								
Mapunit								
Mapunit Symbol	Total Acres	National Mapunit Symbol	Mapunit Name	Mapunit Status				
BsA	5662	20d50	Barnes-Svea loams, 0 to 3 percent slopes	correlated				
	Dickey County, North Dakota	729700	bismarck, nd	Detailed Soil Map Legend	extensive revision	03/15/19		
Legend Mapunit Legend Area Overlap Legend Certification History Legend Export Certification History Legend Text								
Mapunit								
Mapunit Symbol	Total Acres	National Mapunit Symbol	Mapunit Name	Mapunit Status				
15	102780	c9g0	Barnes-Svea loams, 0 to 3 percent slopes	correlated				

NASIS User Guide

Project Land Category Breakdown and Project Mapping Progress

Once the total acres are tallied, the Legend Category Breakdown is identified and the acres are populated by category:

The screenshot displays the NASIS Project Management interface. The top navigation bar includes tabs for Legend, Mapunit, and Project. The main window is divided into several sections. The top section shows project details for 'MLRA SS - Water table study - lower relief till ...' with a justification of 'Knowle 7-8' and a location of 'Devils Lake, North Dakota'. Below this, there are tabs for Project Field Review, Project Land Category Breakdown, Project Mapping Goal, Project Milestone, Project Product, Project Staff, and Project Test. The Project Land Category Breakdown table shows a single entry for 'other non-federal land' with a sequence number of 133404, a record last updated date of 11/16/2009 13:46:05, a NASIS User Name of Finnell, Paul R., and a record ID of 20432. The Project Mapping Progress table shows a single entry for 'other non-federal land' with a progress reporting date of 11/16/2009, initial NRCS acres of 133404, and a project staff member of Finnell, Paul R.

Acres are reported in the Project Mapping Progress table **AFTER** the project is posted to the Soil Data Mart.

The screenshot shows the Project Land Category Breakdown table. The table has two columns: Land Category and Land Category Acres. The Land Category column is currently set to 'other non-federal land' with a value of 133404. A dropdown menu is open, showing a list of land categories: native american land, other non-federal land (highlighted), bureau of land management, u.s. forest service, national park service, other federal land, and census water. The dropdown menu also includes a close button (X) and a search icon.

The "Land Category" choice list provides the various categories. The category is dependent upon the specific map unit and the category in which the map unit is mapped.

NASIS User Guide

Project Milestone

The Project Milestone table documents specific tasks of the Project that are used to identify and document completion of the project.

Project Name		MURA Soil Survey Office Area			Project NASIS Site	NASIS Group
Description	MURA Area Symbol	MURA Area Name	State Responsible	Digitizing Unit	NASIS Site Name	NASIS Group Name
MURA 55 - Water table study - lower relief till plains	Justification: 1 7-8	Devils Lake, North Dakota	nd	montana	NSSC Data	Agronomy
Project: Correlation Project: Data Entry Project: Field Review Project: Lead Cataloging Project: Review Project: Mapping Project: Milestone Project: Product Project: Staff Project: Test						
Milestone Type						
Milestone Type Name	Milestone Description	Scheduled Start Date	Scheduled Completion Date	Milestone Date Started	Milestone Date Completed	
E Edit tabular data						
E Install instrumentation						
E Pedon Descriptions						
E QA of tabular data, initial or updates						
E QC of tabular data, initial or updates						
E Summarize field documentation						

Milestone Type Choice list

This is the initial list at conversion. Additions to this list can be submitted to the Soils Hotline for consideration. Each instance from this list is unique in the table, no duplicates are allowed.

Milestone Type Name	Milestone Type Name
Collect characterization samples	Populate tabular database
Digital map finishing	QA of spatial data, initial or updates
Digitize maps	QA of tabular data, initial or updates
Edit spatial data	QC of spatial data, initial or updates
Edit tabular data	QC of tabular data, initial or updates
English edit	Soil business completed
English edit received	SSURGO archived
Field mapping	SSURGO certification
Gather field documentation	SSURGO digital review
Install instrumentation	SSURGO rearchived
Map compilation	Submit to the Soil Data Mart
Map compilation certification	Summarize field documentation
Maps to NCGC	Technical edit
Maps to printer	Technical Review
milestonetypename	Text received at NCGC
Pedon Descriptions	Text to printer
	Transects

NASIS User Guide

Project Milestone Progress

The Project Milestone Progress records the progress of each Milestone. Progress is recorded by Milestone Type, year, amount, units and staff member.

MLRA Soil Survey Office Area									
Project Name		Description	MLRA Area Symbol	MLRA Area Name	Staff Responsible	Digitizing Unit	Project NASIS Site	NASIS Group	
MLRA 55 - Water table study - lower relief till plains		Justification: 1-7-0		Devils Lake, North Dakota	nd	montana	NSSC Data	Agronomy	
Project Milestone Progress									
Milestone Type	Milestone Type Name	Milestone Description	Scheduled Start Date	Scheduled Completion Date	Milestone Date Started	Milestone Date Completed	Record ID		
E	Edit tabular data						11/09/20		
E	Install instrumentation						11/09/20		
E	Pedon Descriptions						11/09/20		
E	QA of tabular data, initial or updates						11/09/20		
E	QC of tabular data, initial or updates						11/09/20		
E	Summarize field documentation						11/09/20		
Project Milestone Progress									
Fiscal Year	Milestone Progress Amount	Milestone Progress Unit	Project Staff Member	NASIS User Name	Record Last Updated	NASIS User Name	Rec ID		
2010	100 percent	Percent, Pct/B			11/07/2009 11:54:56			11/07/2009 11:54:56	

Milestone Progress Unit Choice List

Milestone Progress Unit	
percent	▼
Name	
acre	
data mapunit	
map unit	
pedon	
percent	
transect	

NASIS User Guide

Project Product

For the majority of the Project Plans created, the actual “product” will be the posting of the updated information to the Soil Data Mart. The Project product table has a choice list available for all types of Projects, however the “Web Publication” will be commonly used.

		Project Name		MLRA Soil Survey Office Area		
		Description	MLRA Area Symbol	MLRA Area Name	State	
► M		MLRA 55 - Water table study - lower relief till plains	Justification: 7-8	Devils Lake, North Dakota		nd
<div>Project Field ReviewProject Land Category BreakdownProject Mapping GoalProject MilestoneProject Product</div>						
		Product Type	Product Description	Scheduled Delivery	Product Text Formatted	Product Text Pro
		IN				
		<div>Name<ul style="list-style-type: none">interim reportsoil attribute/spatial on cd-romsoil survey report on cd-romthree-ring bound manuscripttraditional bound manuscriptweb publication</div>				

Project Field Review

The Project Field Review table captures all field review documentation for the traditional soil surveys and the correlation documentation for update projects.

		Project Name		MLRA Soil Survey Office Area				
		Description	MLRA Area Symbol	MLRA Area Name	State Responsible	Digi		
► M		MLRA 55 - Water table study - lower relief till plains	Justification: 7-8	Devils Lake, North Dakota		nd	mon	
<div>Project MapunitProject CorrelationProject Data NeedProject Field ReviewProject Land Category BreakdownProject Mapping Goal</div>								
		Date	Author	Correlation Event	Review Document	Record Last Upda...		
		IN	11/17/2009			11/17/2009 09:03:08	Finnell, Paul R.	
		<div>Name<ul style="list-style-type: none">correlation amendmentcorrelation team meetingfinal correlationfinal field reviewinitial field reviewprogress field reviewtechnical assist</div>						

Scenario 2: Creating a new MLRA map unit and correlate it to existing survey map units

The vast majority of the update projects will deal with consolidating published map units into MLRA map units creating a seamless coverage. Specific correlation steps must be followed to insure the validity of the new map unit and to insure the historical record is maintained. The update process should document trends and preserve historical records for future analysis. This section of Project Management is the process steps necessary to meet the needs of the update process.

Refer to the first section of this Chapter to load the MLRA data into the selected set.

1. Beginning at the Project table, insert a new row and begin populating. Remember that the name begins with the MLRA (e.g. "MLRA 55 – ").

The screenshot shows a software window titled "Project". Inside, there is a table with the following columns: "Project Name", "Description", "MLRA Area Symbol", "MLRA Area Name", "State Responsible", and "Disposal". The first row of data is highlighted in blue and contains the following information:

Project Name	Description	MLRA Area Symbol	MLRA Area Name	State Responsible	Disposal
MLRA 55B - Barnes and Buse 3 to 6 percent slopes eroded map units	The Barnes...	7-8	Devils Lake, North Dakota	Ind	mo

Below the table, there is a large text area for the description. It contains the following text:

The Barnes soils are benchmark soils that are agriculturally important in the Central Black Glaciated Plains. The purpose of this project is to review the map units in the field and gather documentation to determine the composition of the map unit, to verify soil properties populated for these components, and document the soil erosion over the past decades. Erosion on the shoulder slopes within this map unit are affecting the production levels of this map unit. Additional documentation is necessary to provide scientific evidence to encourage farming practices that minimize erosion. The composition will be determined across the map units within the MLRA to develop a new map unit identifying the soil properties as they currently exist.

At the bottom right of the window, there are "OK" and "Cancel" buttons.

2. All fields pertinent to the update project are populated. The description column may contain an "executive summary" or if available, the project description can be copied and pasted into this field. Make sure the description addresses the question: "Who cares?".

NASIS User Guide

- One method of populating the map units into the Project Mapunit table is to open the Project Mapunit table and insert a new row. From the National Mapunit Symbol choice list or the Mapunit Name choice list, begin to populate the mapunits for the project. Mapunits within the Local Database form the choices.

The screenshot shows the NASIS Project Mapunit table interface. The 'Project' tab is active, displaying a table with columns: Project Name, Description, MLRA Area Symbol, and MLRA Area Name. Below this, a 'Mapunit' table is shown with columns: National Mapunit Symbol, Mapunit Name, Mapunit Status, and Record Last Updated. A red arrow points to the 'Mapunit Name' column, highlighting a filter applied to the choice list: '[Mapunit Name] = 'BARNES-BUSE LOAMS, 3 TO 6 PERCENT SLOPES' And [Mapunit Name] Like 'Bar...'.

Notice the use of a filter in the choice list to limit it to specific map units.

- Another method of populating the Project Mapunit table is to load the specific map units into the Mapunit table and copy the map units. Pay close attention to what happens with the Project by viewing the mapunits in the Mapunit table.
- Using a query to load the Legend Mapunit and Mapunit tables – this national query “Area/Lmapunit/Mapunit/DMU by Mapunit Name (Official Data)”:

The screenshot shows the 'Selections for Running Query Area/Lmapunit/Mapunit/DMU by Mapunit Name (Official data)' dialog box. The 'Target Tables' section shows a list of tables with checkboxes: Area, Legend Mapunit, Mapunit, Correlation, Data Mapunit, Arc: !y:,, and Legend. The 'Mapunit' table is selected. The 'Area Symbol IMATCHES:' field contains an asterisk (*). The 'Mapunit Name IMATCHES:' field contains the text 'Barnes-Buse loams, 3 to 6 percent slopes'.

Or

NASIS User Guide

- To load the Legend Mapunit and Mapunit tables with a specific map unit within a specific MLRA – this national query
“Area/Lmapunit/Mapunit/DMU by Mapunit Name by MLRA”:

Selections for Running Query W - Area/Lmapunit/Mapunit/DMU by mapunit name by MLRA

Target Tables:

- ☐ Area Type (at1)
- ☐ Area (a1)
- ☐ Area (area2)
- ☒ Legend Mapunit
- ☒ Mapunit
- ☐ Data Mapunit
- ☐ Legend Mapunit Area Overlap
- ☐ Legend
- ☐ Legend Area Overlap
- ☐ Correlation

Mapunit Name IMATCHES: Barnes-Buse loams, 3 to 6 percent slopes

MLRA symbol: 55B

Non-MLRA Soil Survey Area: *

Run Cancel

☐ Check Out

- Notice there are 5 map units designated as Prime Farmland (Farm Class = 1) and 6 map units designated as Statewide Important Farmland (Farm Class = 30). This will require two MLRA map units.

Should this be split into two Projects? Or can it be worked as one Project? This scenario could be worked as one project however a Project is designed to manage map units. This scenario will maintain the separate map units based on farm classification because this is an important agricultural interpretation.

Legend Mapunit Data Mapunit Project Correlation						
		Mapunit Name ↑	Kind	Status ↑	National Mapunit Symbol	Farm Class
	+	Barnes-Buse loams, 3 to 6 percent slopes C	complex	correlated	c9g3	1
	+	Barnes-Buse loams, 3 to 6 percent slopes C	complex	correlated	cdc5	1
	+	Barnes-Buse loams, 3 to 6 percent slopes C	complex	correlated	d2rj	1
	+	Barnes-Buse loams, 3 to 6 percent slopes C	complex	correlated	d306	1
	+	Barnes-Buse loams, 3 to 6 percent slopes C	complex	correlated	1q9zb	30
	+	Barnes-Buse loams, 3 to 6 percent slopes C	complex	correlated	1qbgk	30
	+	Barnes-Buse loams, 3 to 6 percent slopes C	complex	correlated	20d55	30
	+	Barnes-Buse loams, 3 to 6 percent slopes C	complex	correlated	20g12	30
	+	Barnes-Buse loams, 3 to 6 percent slopes C	complex	correlated	20gwj	30
	+	Barnes-Buse loams, 3 to 6 percent slopes C	complex	correlated	20h4k	30

The limitation in using the choice list to populate the Project Mapunit table is realizing the map units that are being selected. The evaluations would have identified the need for two map MLRA map units because of the Farm Class designations. Two projects should be considered to reduce confusion. To complete this scenario it is necessary to return to the Project Mapunit table.

NASIS User Guide

Return to the Project Mapunit table to create another Project

Legend Mapunit Data Mapunit Project Correlation					
		Project Name	Description	MLRA Area Symbol	MLRA Area Name
M	+	MLRA 55B - Barnes and Buse 3 to 6 percent slopes Prime	The Barnes ...	7-8	Devils Lake, North Dakota
N	-	MLRA 55B - Barnes and Buse 3 to 6 percent slopes Statewide	The Barnes ...	7-8	Devils Lake, North Dakota

- The Project Mapunit table can now be populated by copying the appropriate map units from the Mapunit table and pasting the map units in the appropriate Project:

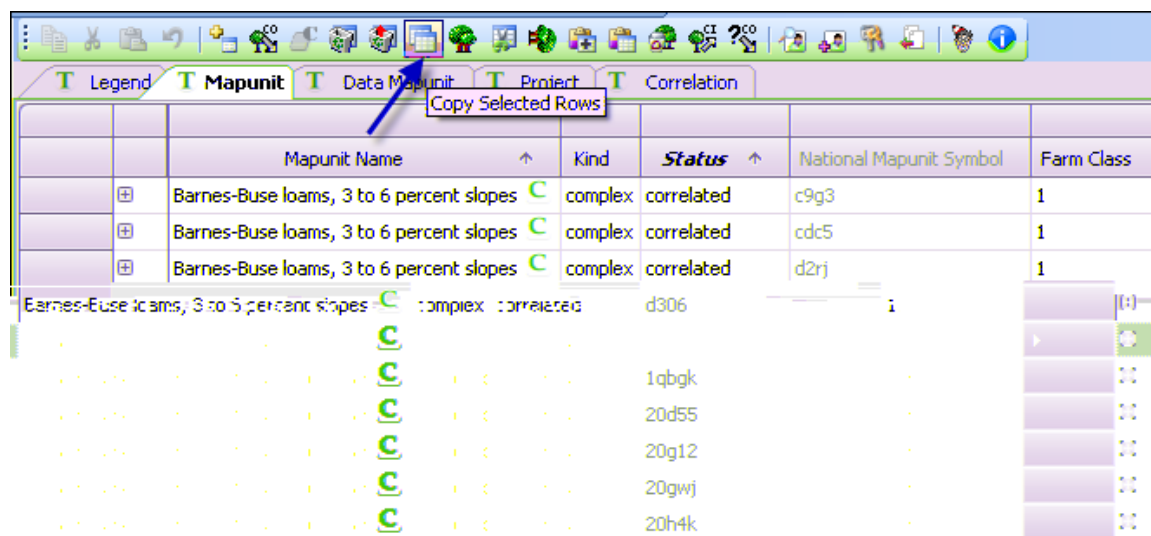
Legend Mapunit Data Mapunit Project Correlation					
		Mapunit Name	Kind	Status	National Mapunit Symbol
+		Barnes-Buse loams, 3 to 6 percent slopes	complex	correlated	c9g3
+		Barnes-Buse loams, 3 to 6 percent slopes	complex	correlated	cdc5
+		Barnes-Buse loams, 3 to 6 percent slopes	complex	correlated	d2rj
+		Barnes-Buse loams, 3 to 6 percent slopes	complex	correlated	d306
+		Barnes-Buse loams, 3 to 6 percent slopes	complex	correlated	1q9zb
+		Barnes-Buse loams, 3 to 6 percent slopes	complex	correlated	1qbgk
+		Barnes-Buse loams, 3 to 6 percent slopes	complex	correlated	20d55
+		Barnes-Buse loams, 3 to 6 percent slopes	complex	correlated	20g12
+		Barnes-Buse loams, 3 to 6 percent slopes	complex	correlated	20gwj
+		Barnes-Buse loams, 3 to 6 percent slopes	complex	correlated	20h4k

Then paste in the appropriate Project:

Legend Mapunit Data Mapunit Project Correlation					
		Project Name	Description	MLRA Area Symbol	MLRA Soil Survey Office Area
E	-	MLRA 55B - Barnes and Buse 3 to 6 percent slopes Prime	The Barnes ...	7-8	
Project Mapunit Project Correlation Project Data Need Project Field Review Project Land Category					
Mapunit					
	National Mapunit Symbol	Mapunit Name	Mapunit Status		
N	c9g3	Barnes-Buse loams, 3 to 6 percent slopes	correlated		
N	cdc5	Barnes-Buse loams, 3 to 6 percent slopes	correlated		
N	d2rj	Barnes-Buse loams, 3 to 6 percent slopes	correlated		
N	d306	Barnes-Buse loams, 3 to 6 percent slopes	correlated		
E	-	MLRA 55B - Barnes and Buse 3 to 6 percent slopes Statewide	The Barnes ...	7-8	

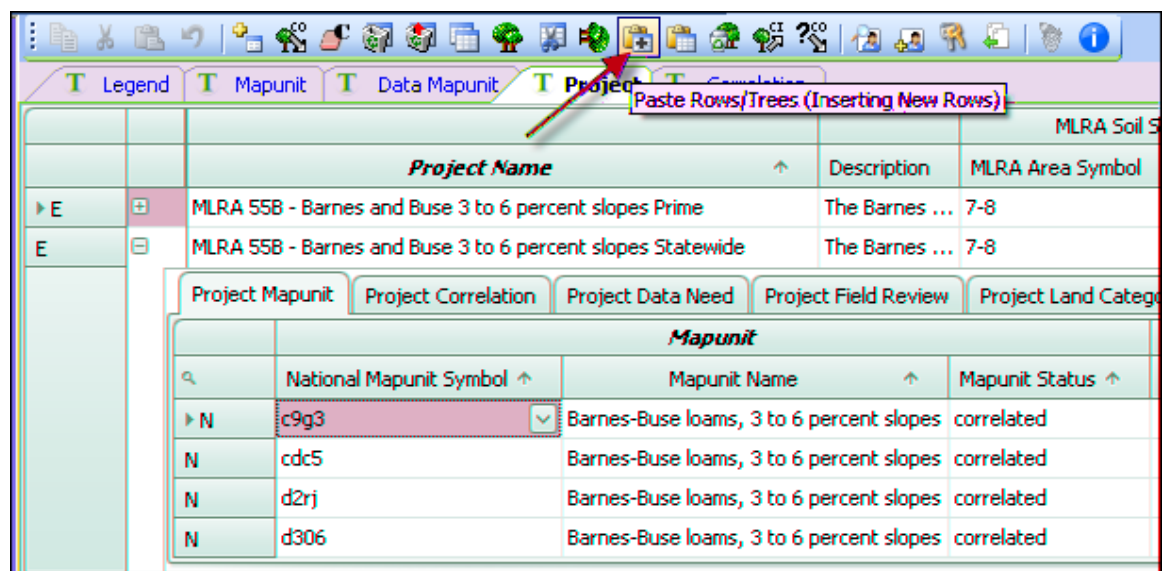
NASIS User Guide

9. Then copy and paste map units for the second Project Mapunit table:



	Mapunit Name ↑	Kind	Status ↑	National Mapunit Symbol	Farm Class
+	Barnes-Buse loams, 3 to 6 percent slopes	complex	correlated	c9g3	1
+	Barnes-Buse loams, 3 to 6 percent slopes	complex	correlated	cdc5	1
+	Barnes-Buse loams, 3 to 6 percent slopes	complex	correlated	d2rj	1
	Barnes-Buse loams, 3 to 6 percent slopes	complex	correlated	d306	1
				1qbgk	
				20d55	
				20g12	
				20gwj	
				20h4k	

And paste into the appropriate Project:



Project Name ↑			Description	MLRA Area Symbol
E	+	MLRA 55B - Barnes and Buse 3 to 6 percent slopes Prime	The Barnes ...	7-8
E	-	MLRA 55B - Barnes and Buse 3 to 6 percent slopes Statewide	The Barnes ...	7-8

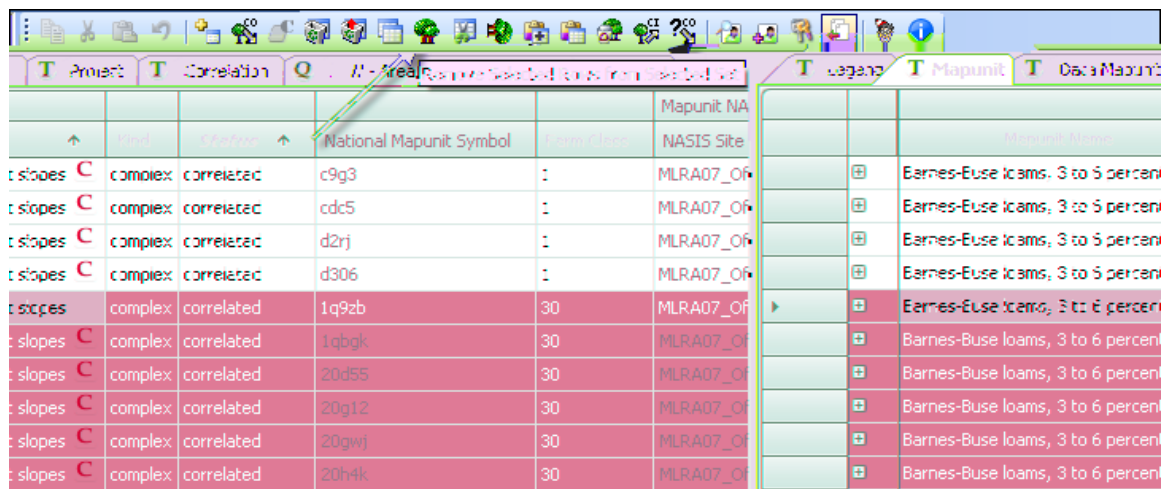
Mapunit			
	National Mapunit Symbol ↑	Mapunit Name ↑	Mapunit Status ↑
N	c9g3	Barnes-Buse loams, 3 to 6 percent slopes	correlated
N	cdc5	Barnes-Buse loams, 3 to 6 percent slopes	correlated
N	d2rj	Barnes-Buse loams, 3 to 6 percent slopes	correlated
N	d306	Barnes-Buse loams, 3 to 6 percent slopes	correlated

NASIS User Guide

To this point,

1. Data for the MLRA was retrieved from the National database and populated the Local database.
2. A project was created in the Project table.
3. The Project Mapunit table is opened and can be populated via choice lists, OR
4. The Selected Set is populated with map units into the Mapunit table and the map units are copied and pasted into the Project Mapunit table.
5. The remaining tasks include populating the Project child tables (*refer to scenario one for details*).
 - a. Project Staff (*specific staff members assigned to the project*)
 - b. Project Mapping Goal (*sum of all map unit acres*)
 - c. Project Land Category Breakdown (*acres assigned to land category*)
 - d. Project Milestone (*milestones for the project*)
 - e. Project Text (*investigation plan, project plan, etc.*)
 - f. Remaining tables as needed
6. Upload all Changes to the National Database.
7. Project has now been created.

Since this scenario will focus on the Prime map units, only, the Statewide map units will be removed from the selected set using the Editor Toolbar icon “Remove Selected Rows from Selected Set”.



	↑	↓	↑	National Mapunit Symbol	Acres	NASIS Site
t slopes	C	complex	correlated	c9g3	1	MLRA07_Of
t slopes	C	complex	correlated	cdc5	1	MLRA07_Of
t slopes	C	complex	correlated	d2rj	1	MLRA07_Of
t slopes	C	complex	correlated	d306	1	MLRA07_Of
t slopes	C	complex	correlated	1q9zb	30	MLRA07_Of
t slopes	C	complex	correlated	1qbgk	30	MLRA07_Of
t slopes	C	complex	correlated	20d55	30	MLRA07_Of
t slopes	C	complex	correlated	20g12	30	MLRA07_Of
t slopes	C	complex	correlated	20gwj	30	MLRA07_Of
t slopes	C	complex	correlated	20h4k	30	MLRA07_Of

Creating the MLRA Map Unit and Data Mapunit

The Project has now been created. The continuation of this scenario will focus on the “MLRA 55B – Barnes-Buse loams, 3 to 6 percent slopes Prime” project. During the course of the Project, data will be gathered and decisions will be made. The purpose of an update project is to improve the quality of the product. The purpose should also be to identify the state of the inventory at the time of the project. Capturing the data in a specific date and time will allow for identification of trends. To capture trends the next step will be creation of the update map unit and its data mapunit.

1. Return to the Mapunit table and insert a new row and create the MLRA map unit.

The screenshot shows the NASIS Mapunit table with the following data:

Mapunit Name	Kind	Status	National Mapunit Symbol	Farm Class	Mapunit NASIS Site	NASIS Group
Barnes-Buse loams, 3 to 6 percent slopes	complex	provisional	1g1hv	1	MLRA07_Office	7-8 Devils Lake, North Dakota

The Mapunit History table is also visible, showing the following data:

Date	Author	Correlation Kind	Correlation Event	Historical Name	Status	Text Entry
11/10/2009	Paul R. Finnell	status change - added	initial field review	Barnes-Buse loams, 3 to 6 p...	correlated	This new map unit is created to establish a new MLRA map unit and to preserve existing data for historical purposes.

Notice the new map unit is assigned to *Provisional* status. The Mapunit History table is opened and all fields are populated.

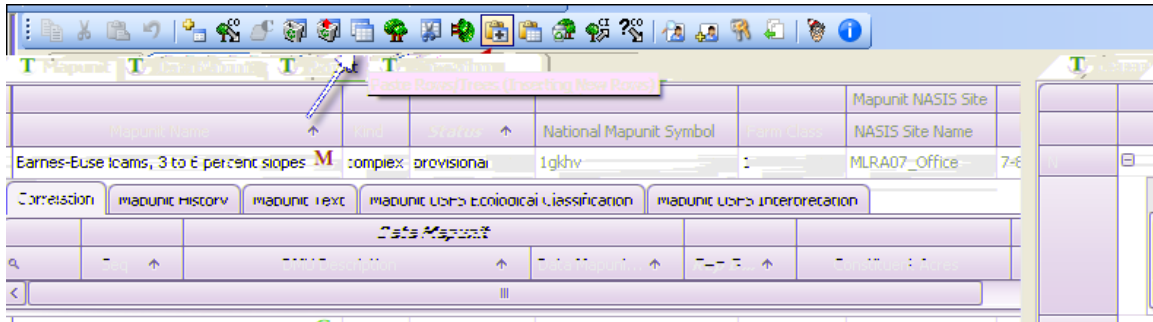
2. In the Explorer panel, open the “Correlation” table. This table opens in the Editor panel. It contains all the correlation records for the map units in the selected set. Copy all unique records.

The screenshot shows the NASIS Correlation table with the following data:

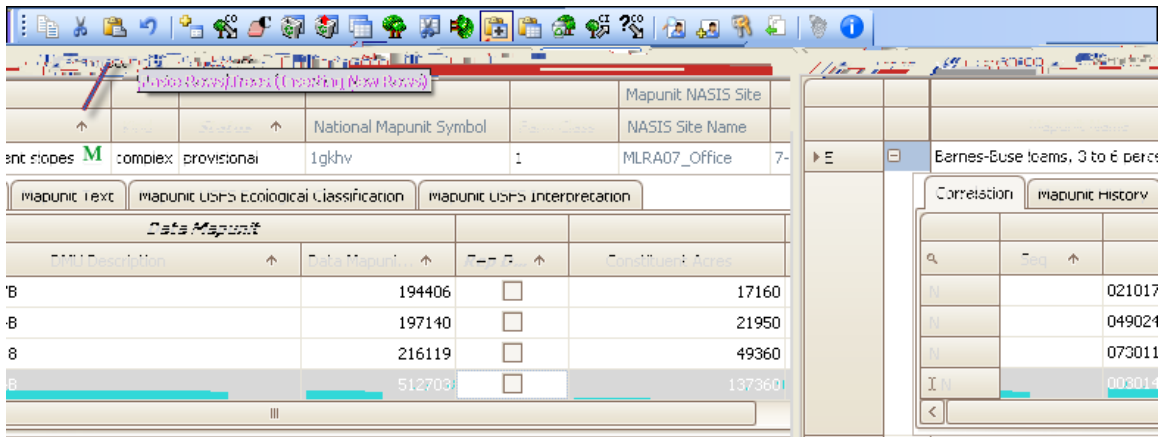
National Mapunit...	Mapunit Name	Mapunit ...	DMU Description	Data Mapunit...	Rep DMU	Constituent Acres
c9g3	Barnes-Buse loams, 3 to 6 percent slopes	correlated	021017B	194406		17160
049024B	Barnes-Buse loams, 3 to 6 percent slopes	correlated	049024B	192149		20950
073011B	Barnes-Buse loams, 3 to 6 percent slopes	correlated	073011B	216119		49360
073014B	Barnes-Buse loams, 3 to 6 percent slopes	correlated	073014B	512703		137360

NASIS User Guide

- Return to the Mapunit table and select the new map unit. Click on the plus (+) to open the child tables. Highlight the Correlation tab and click on the icon "Paste Rows/Trees (Inserting New Rows)".



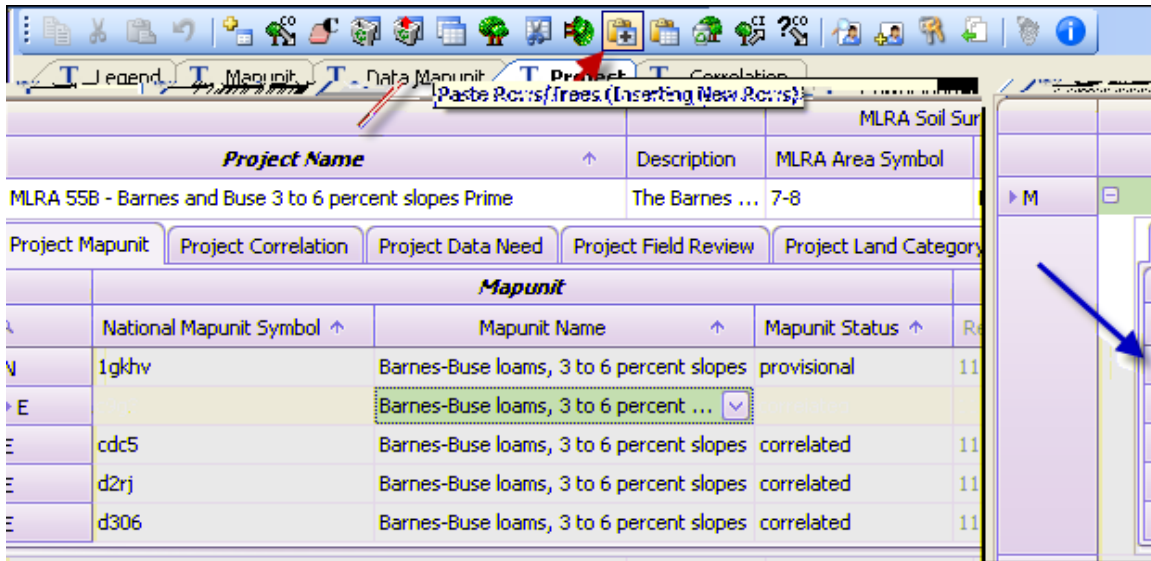
The resulting paste adds all published map unit correlation records into the new MLRA mapunit.



This process is linking of the old publication map units to the new MLRA map unit. The new MLRA map unit is now linked to the original traditional survey map units. This step is required in order to record the conversion of the old map units to the new map unit. The check mark in the RepDMU column is removed since these data mapunit records are not representative of the MLRA map unit.

NASIS User Guide

4. Highlight and copy the MLRA map unit and paste it into the Project Mapunit table.



The Project Mapunit table now contains the original 4 historical map units and the new MLRA map unit. The historical information of each map unit is preserved in the Survey Legend and in the Mapunits' Datamapunit. Information created for the MLRA map unit is maintained in the new MLRA mapunit.

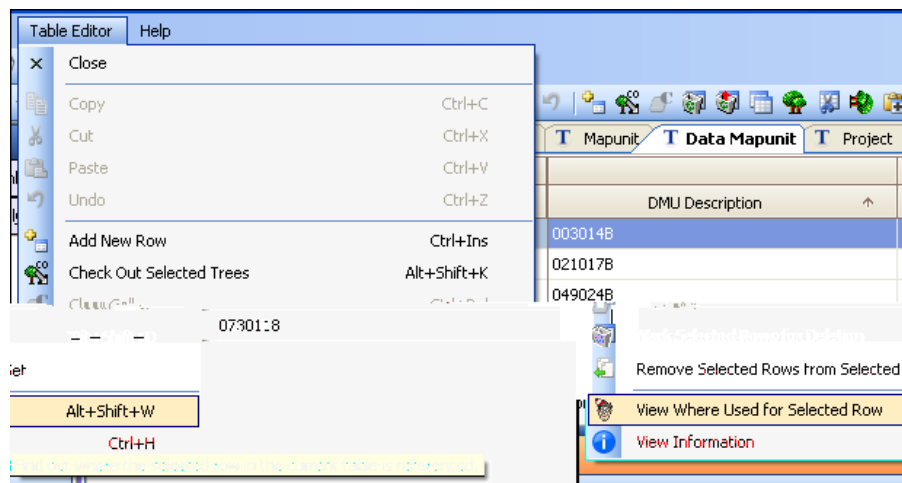
5. The MLRA map unit will need a new DMU to provide data pertinent to it. The user can identify a DMU and copy and paste or they can open the DMU table, insert a row and begin populating data. In this example a DMU is copied and pasted.

Create a new Datamapunit for the MLRA map unit and link the map unit and DMU

1. Open the Data Mapunit table and review the available DMUs to identify the one that will be copied to create the new MLRA DMU:

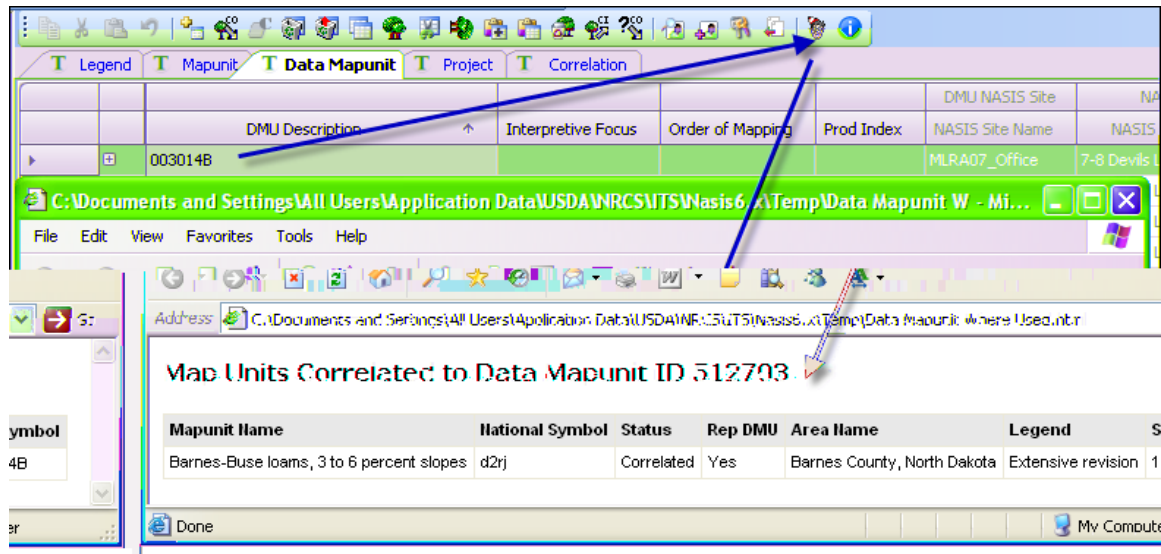
T Legend		T Mapunit		T Data Mapunit		T Project		T Correlation					
		DMU Description ↑				Interpretive Focus		Order of Mapping		Prod Index			
		003014B								ML			
		Component		Data Mapunit Certification History		Data Mapunit Crop Yield		Data Mapunit Text					
				Comp %									
		Seq ↑		Low	RV ↓	High	Component Name ↑						
		+			50		Barnes C						
		+			30		Buse C						
		+			11		Svea C						
		+			5		Balaton C						
		+			4		Tonka C						
		<											
												ML	
		021017B											
		Component		Data Mapunit Certification History		Data Mapunit Crop Yield		Data Mapunit Text					
				Comp %									
		Seq ↑		Low	RV ↓	High	Component Name ↑						
		+			45		Barnes C						
		+			29		Buse C						
		+			14		Svea C						
		+			5		Cresbard C						
		+			5		Eckman C						
		+			2		Parnell C						
		<											

2. Identify the Datamapunit that will be used as the foundation for the MLRA Mapunit. Click on the Table Editor menu “Where’s Waldo” icon (View Where Used for Selected Row).

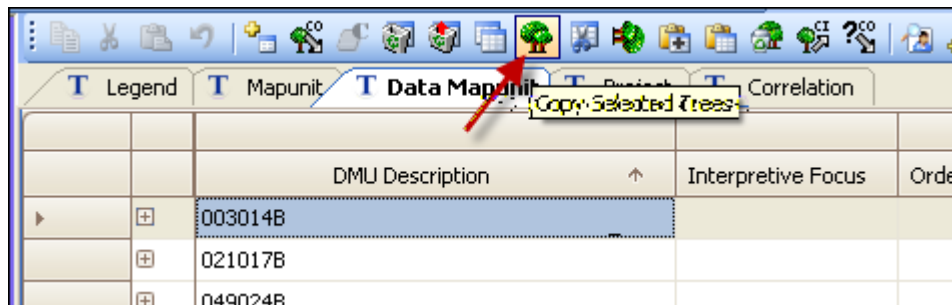


NASIS User Guide

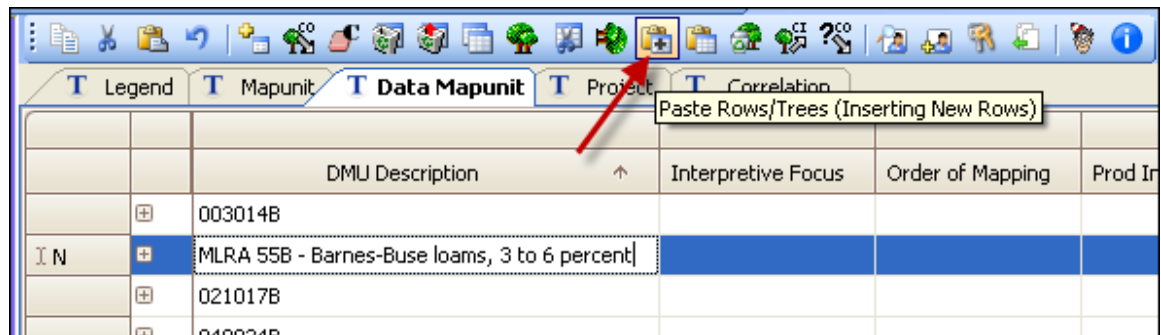
3. This report will identify the map units this particular DMU is linked.



4. Highlight the chosen DMU. Select the “Copy Selected Trees” from the Table Editor menu or the Editor toolbar icon.

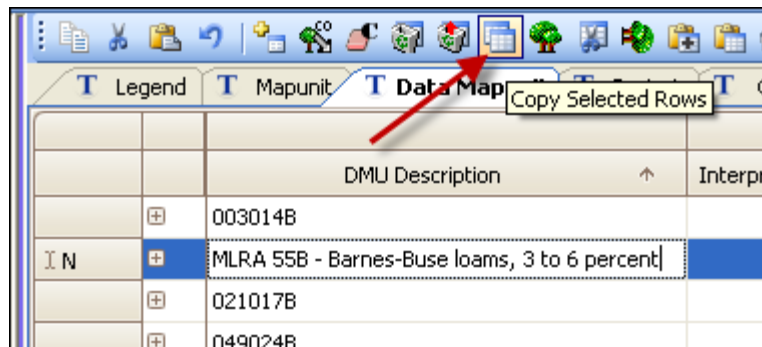


5. Then “Paste Rows/Trees (Inserting New Rows)” and rename the DMU.

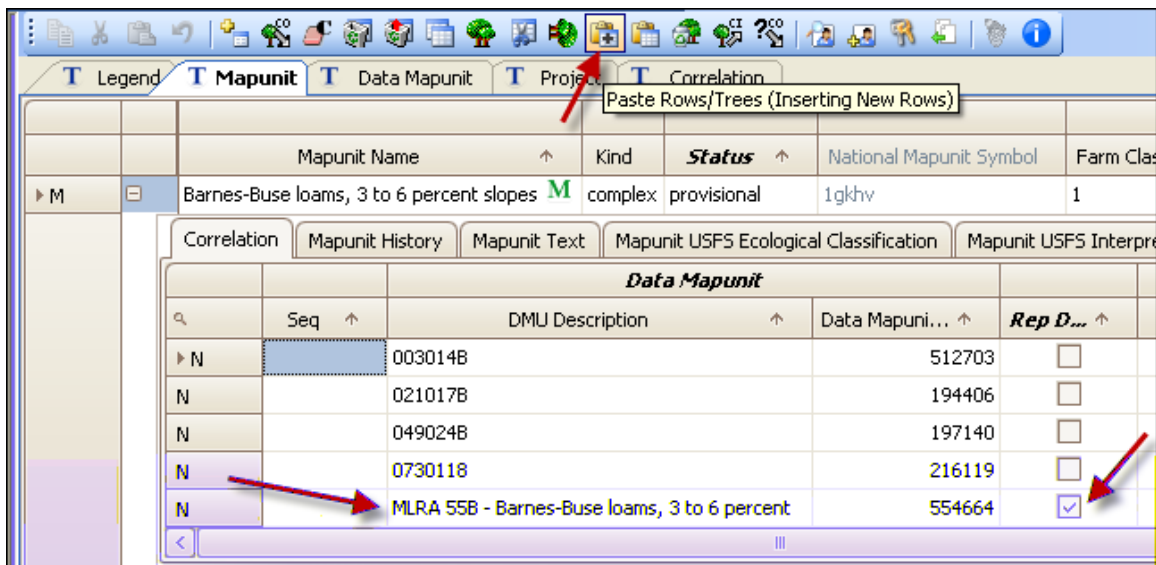


NASIS User Guide

- The next step is to link the new MLRA DMU to the new MLRA Map unit. To make this link, choose "Copy Selected Rows" from either the Table Editor Menu or the Table Editor Toolbar:



- Then moving to the Mapunit table, choose the MLRA mapunit and open the child table to Correlation and "Paste Rows/Trees (Inserting New Rows)":



- The MLRA DMU is checked as the Representative Data Mapunit and make sure the other records are unchecked.

NASIS User Guide

To this point,

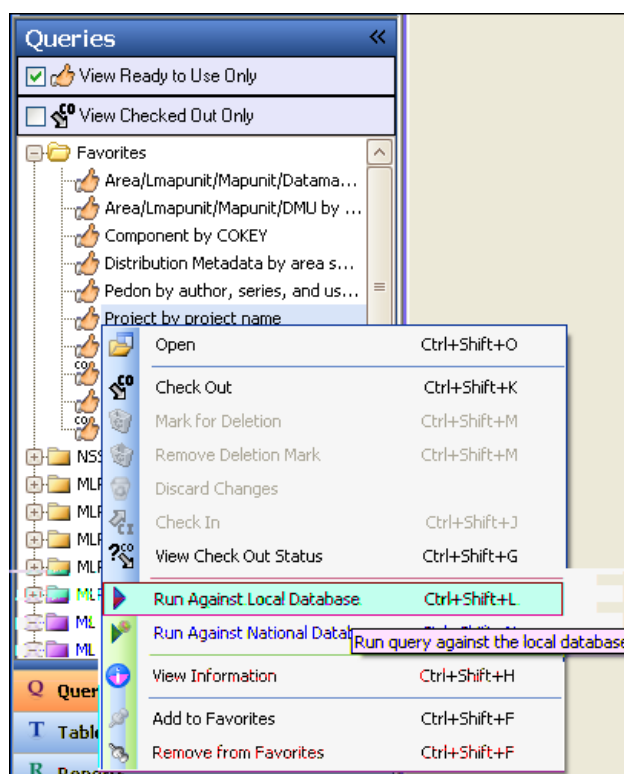
1. Data for the MLRA was retrieved from the National database and populated the Local database.
2. A project was created in the Project table.
3. The Project Mapunit table is opened and can be populated via choice lists, OR
4. The Selected Set is populated with map units into the Mapunit table and the map units are copied and pasted into the Project Mapunit table.
5. The remaining tasks include populating the Project child tables (*refer to scenario one for details*).
 - g. Project Staff (*specific staff members assigned to the project*)
 - h. Project Mapping Goal (*sum of all map unit acres*)
 - i. Project Land Category Breakdown (*acres assigned to land category*)
 - j. Project Milestone (*milestones for the project*)
 - k. Project Text (*investigation plan, project plan, etc.*)
 - l. Remaining tables as needed
6. Upload all Changes to the National Database.
7. Project was created.
8. A new MLRA Mapunit was created so that all project work would be completed on the new map unit. This step prevents tampering with the official survey data until the project correlation is complete.
9. The correlation records of the existing map units were copied from the Correlation table and pasted into the Correlation table of the new MLRA map unit. These records in the correlation table link the new MLRA map unit to the original survey map units. A new MLRA map unit is created to preserve the historical nature of the original subset map units.
10. A new Data Mapunit was created for the MLRA map unit – once again, the original DMUs are preserved for historical purposes and this allows the user to create new data without impacting the official soil survey data until the correlation is completed. This particular DMU was created using copy and paste. The DMU is then updated with information collected from the field. This data is used to aggregate the individual “county subset” map units into a new “MLRA mapunit”.
11. The new DMU record is copied and pasted into the MLRA Mapunit correlation table. The new DMU is set as the representative DMU and the others are set to no (the check mark is removed)

This is the process for use in correlating new MLRA map units. By following this procedure, the new MLRA map unit is linked to the map units used in the survey subsets and it preserves the historical nature of the map units and their data.

Linking the new MLRA map unit to the survey legends

This step assumes the correlation of the Project is complete and the data is ready to be certified and submitted to the Soil Data Warehouse. The spatial data is updated and loaded into the staging server. The NASIS attribute data is updated and exported to the Staging Server. Both databases are ready to be merged, validated and ready for the State Soil Scientist to submit to the Soil Data Warehouse.

1. Assuming the NASIS selected set is empty, the first step is to load the Project into the selected set.

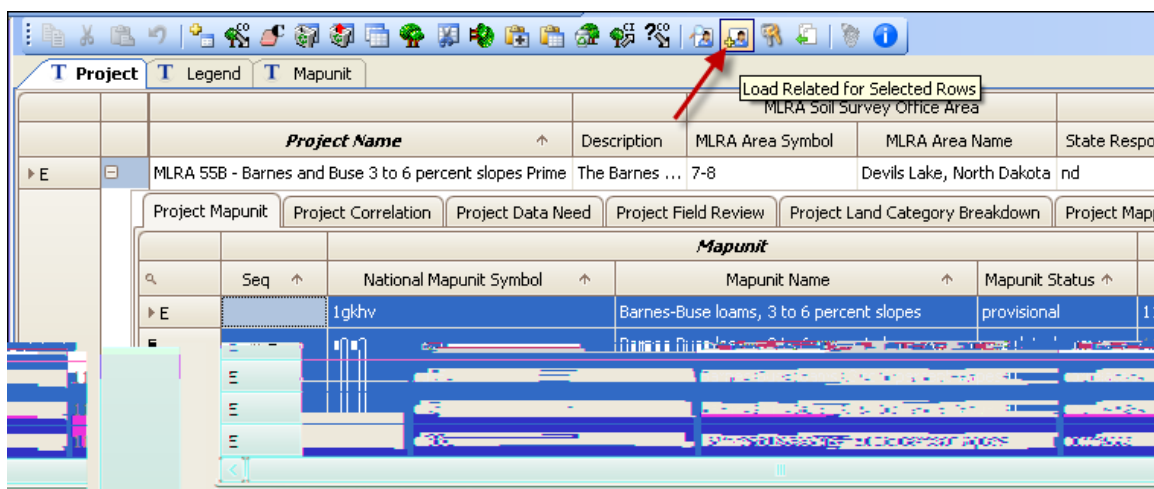


2. The national query “Project by Project Name” is used. The query will be “Run Against Local Database” because the Project should be in the local database. The project name is entered (abbreviated in the “Project Name” parameter) and the “Check Out” is checked so that the Project can be edited.

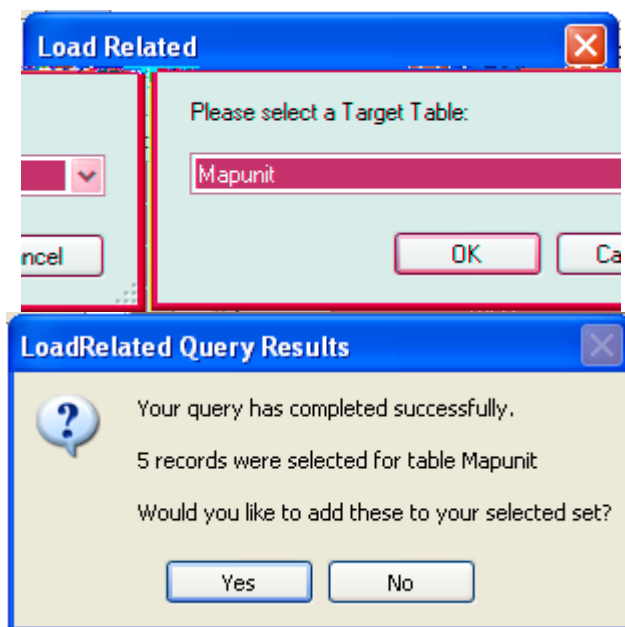


NASIS User Guide

3. Open the Project Mapunit table. This Project is completed, all the spatial work is complete, the database is fully populated with information collected from the field and lab data to support soil properties. This Project is ready to be correlated into the traditional survey areas for publication.



4. Highlight all the map units and select from either the Table Editor Toolbar or Table Editor menu the “Load Related for Selected Rows” (see image above). Choose “Mapunit”, the default table, from the choice list:



NASIS User Guide

- Open the Mapunit table. Highlight all the map units and “Check Out”:

		Mapunit Name ↑	Kind	Status ↑	National Mapunit Symbol
E	+	Barnes-Buse loams, 3 to 6 percent slopes	complex	provisional	1gkhv
E	+	Barnes-Buse loams, 3 to 6 percent slopes	complex	correlated	c9g3
E	+	Barnes-Buse loams, 3 to 6 percent slopes	complex	correlated	cdc5
E	+	Barnes-Buse loams, 3 to 6 percent slopes	complex	correlated	d2rj
E	+	Barnes-Buse loams, 3 to 6 percent slopes	complex	correlated	d306

Dropdown menu options: provisional, approved, correlated, additional

- Change the map unit status from “correlated” to “additional” on the original map units and change the status from “provisional” to “correlated” on the MLRA map unit.

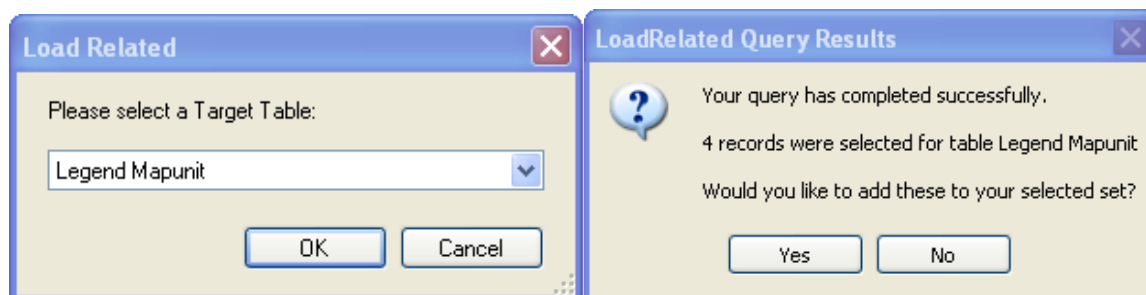
		Mapunit Name ↑	Kind	Status ↑	National Mapunit Symbol
E	+	Barnes-Buse loams, 3 to 6 percent slopes	complex	correlated	1gkhv
E	+	Barnes-Buse loams, 3 to 6 percent slopes	complex	additional	c9g3
E	+	Barnes-Buse loams, 3 to 6 percent slopes	complex	additional	cdc5
E	+	Barnes-Buse loams, 3 to 6 percent slopes	complex	additional	d2rj
E	+	Barnes-Buse loams, 3 to 6 percent slopes	complex	additional	d306

- The next step is to load the Legends these map units are linked. Highlight the map units and, again, select from either the Table Editor Toolbar or Table Editor menu the “Load Related for Selected Rows”:

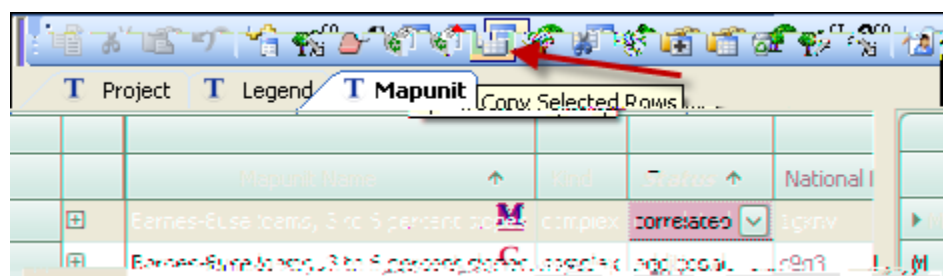
		Mapunit Name ↑	Kind	Status ↑	National Mapunit Symbol	Farm Class
M	+	Barnes-Buse loams, 3 to 6 percent slopes	complex	correlated	1gkhv	1
M	+	Barnes-Buse loams, 3 to 6 percent slopes	complex	additional	c9g3	1
M	+	Barnes-Buse loams, 3 to 6 percent slopes	complex	additional	cdc5	1
M	+	Barnes-Buse loams, 3 to 6 percent slopes	complex	additional	d2rj	1
M	+	Barnes-Buse loams, 3 to 6 percent slopes	complex	additional	d306	1

NASIS User Guide

- Choose the Legend Mapunit table:



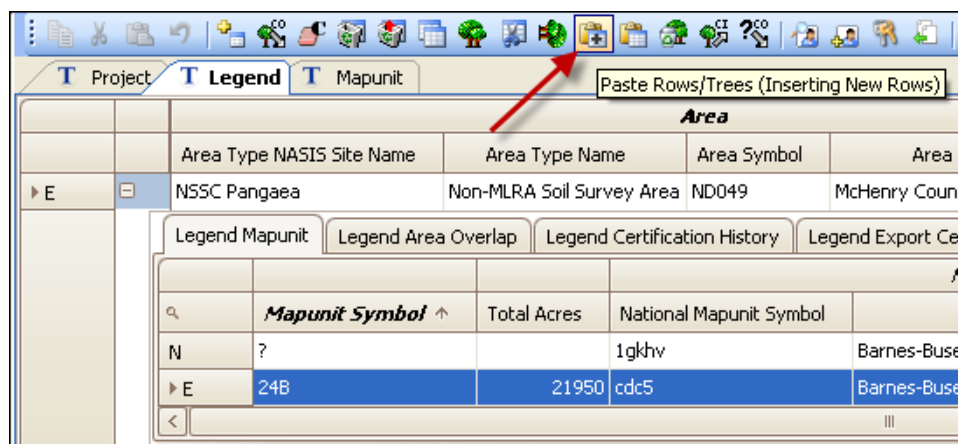
- Before moving to the Legend table, copy the MLRA map unit using “Copy Selected Rows” and link it to the Legends, replacing the previous map units.



- Then, open the Legend table and “Check Out” the Legends.

Area					
		Area Type NASIS Site Name	Area Type Name	Area Symbol	Area Name
▶ E	+	NSSC Pangaea	Non-MLRA Soil Survey Area	ND049	McHenry County, North Dakota
E	+	NSSC Pangaea	Non-MLRA Soil Survey Area	ND003	Barnes County, North Dakota
E	+	NSSC Pangaea	Non-MLRA Soil Survey Area	ND021	Dickey County, North Dakota
E	+	NSSC Pangaea	Non-MLRA Soil Survey Area	ND073	Ransom County, North Dakota

- Open each Legend Mapunit table and “Paste Rows/Trees (Inserting New Rows)”.



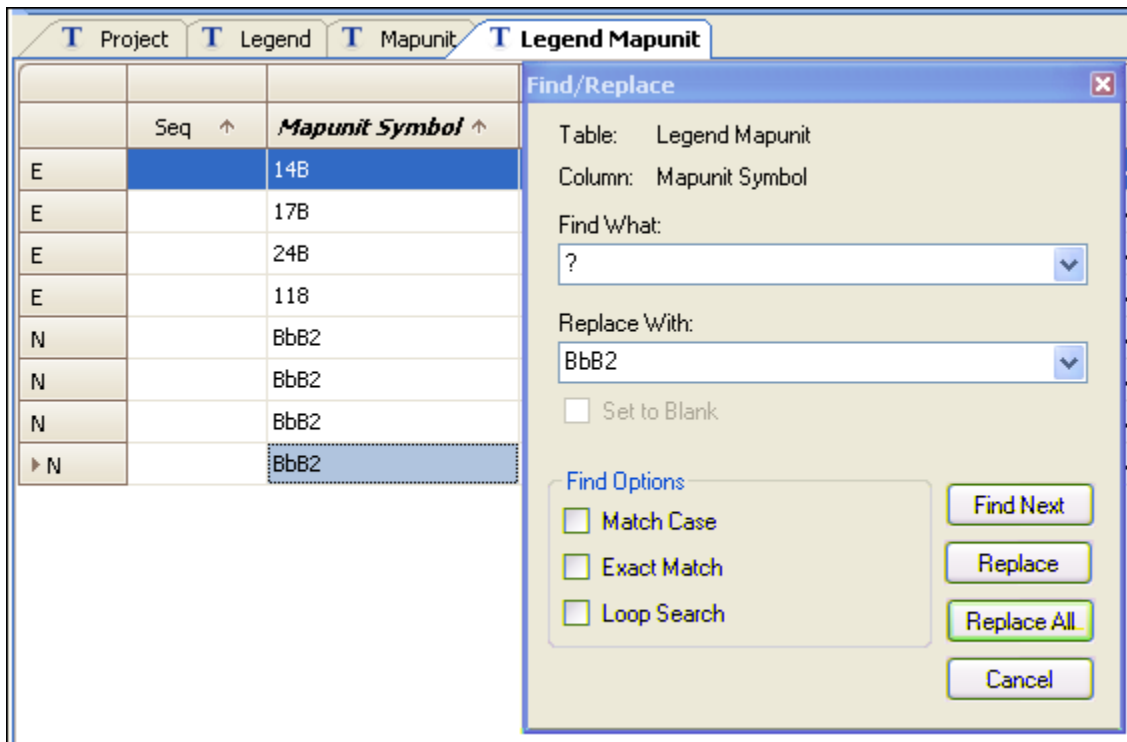
NASIS User Guide

12. The new Mapunit is then pasted into each Legend. Notice the original map unit status is “additional”. The status is populated in the Mapunit table. The new map unit is assigned a new local map unit symbol. Its status as “correlated” was edited in the Mapunit table. Notice the National Map Unit Symbol is the same for all four legends.

Project Legend Mapunit																														
Area																														
	Area Type NASIS Site Name	Area Type Name	Area Symbol	Area Name	Area Acres	MLRA Office																								
E	NSSC Pangaea	Non-MLRA Soil Survey Area	ND049	McHenry County, North Dakota	1223800	bismarck, nd																								
<div>Legend Mapunit Legend Area Overlap Legend Certification History Legend Export Certification History Legend Text</div> <table border="1"> <thead> <tr> <th colspan="6">Mapunit</th> </tr> <tr> <th></th> <th>Mapunit Symbol</th> <th>Total Acres</th> <th>National Mapunit Symbol</th> <th>Mapunit Name</th> <th>Mapunit Status</th> </tr> </thead> <tbody> <tr> <td>N</td> <td>?</td> <td></td> <td>1gkhv</td> <td>Barnes-Buse loams, 3 to 6 percent slopes</td> <td>correlated</td> </tr> <tr> <td>E</td> <td>24B</td> <td>21950</td> <td>cdc5</td> <td>Barnes-Buse loams, 3 to 6 percent slopes</td> <td>additional</td> </tr> </tbody> </table>							Mapunit							Mapunit Symbol	Total Acres	National Mapunit Symbol	Mapunit Name	Mapunit Status	N	?		1gkhv	Barnes-Buse loams, 3 to 6 percent slopes	correlated	E	24B	21950	cdc5	Barnes-Buse loams, 3 to 6 percent slopes	additional
Mapunit																														
	Mapunit Symbol	Total Acres	National Mapunit Symbol	Mapunit Name	Mapunit Status																									
N	?		1gkhv	Barnes-Buse loams, 3 to 6 percent slopes	correlated																									
E	24B	21950	cdc5	Barnes-Buse loams, 3 to 6 percent slopes	additional																									
E	NSSC Pangaea	Non-MLRA Soil Survey Area	ND003	Barnes County, North Dakota	968700	bismarck, nd																								
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Mapunit																														
	Mapunit Symbol	Total Acres	National Mapunit Symbol	Mapunit Name	Mapunit Status																									
N	?		1gkhv	Barnes-Buse loams, 3 to 6 percent slopes	correlated																									
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E	NSSC Pangaea	Non-MLRA Soil Survey Area	ND021	Dickey County, North Dakota	729700	bismarck, nd																								
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Mapunit																														
	Mapunit Symbol	Total Acres	National Mapunit Symbol	Mapunit Name	Mapunit Status																									
N	?		1gkhv	Barnes-Buse loams, 3 to 6 percent slopes	correlated																									
E	17B	17160	c9g3	Barnes-Buse loams, 3 to 6 percent slopes	additional																									
E	NSSC Pangaea	Non-MLRA Soil Survey Area	ND073	Ransom County, North Dakota	552800	bismarck, nd																								
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Mapunit																														
	Mapunit Symbol	Total Acres	National Mapunit Symbol	Mapunit Name	Mapunit Status																									
N	?		1gkhv	Barnes-Buse loams, 3 to 6 percent slopes	correlated																									
E	118	49692	d306	Barnes-Buse loams, 3 to 6 percent slopes	additional																									

Other important steps include:

1. **Population of a new map unit symbol.** It is assumed that if the new map unit is created then a new map unit symbol would be used. The “Mapunit Symbol” column is populated based on the needs of the particular Legend. With that explained, “assuming” there is a need to globally assign a single symbol, it can be accomplished using the Find/Replace command in the Legend Mapunit table. From the Table Explorer, open the Legend Mapunit table, right-click on the Mapunit Symbol and choose Find/Replace:



Enter the “?” in the “Find What” and the new symbol in the “Replace With” and choose “Replace All”.

NASIS User Guide

2. **Population of the Mapunit History table** – this table is populated whenever a new map unit is created and at each correlation event in which the map unit is affected. The Mapunit History table is populated when the MLRA map unit is created. Now that it has been correlated and replaced 4 other map units, then all 5 mapunits must have an entry into the Mapunit History table:

Date	Author	Correlation Kind	Correlation Event	Historical Name	Status	Text Entry	Record Last Updated
11/20/2009	Paul R. Finnell	status change - added	initial field review	Barnes-Buse loams, 3 to 6 percent slopes	provisional	The map unit has now been correlated by 2009 and is replacing 4 original map units located in 100%, 200%, counties,	11/20/2009 12:14:46
Barnes-Buse loams, 3 to 6 percent slopes	complex	additional	c9p3	1	MLRA07_Office	7-8 De	
Barnes-Buse loams, 3 to 6 percent slopes	complex	additional	c9.5	1	MLRA07_Office	7-8 De	
Barnes-Buse loams, 3 to 6 percent slopes	complex	additional	d0rj	1	MLRA07_Office	7-8 De	
Barnes-Buse loams, 3 to 6 percent slopes	complex	additional	d006	1	MLRA07_Office	7-8 De	

And, the four map units replaced must have an entry in the Mapunit History table:

Date	Author	Correlation Kind	Correlation Event	Historical Name	Status	Text Entry	Record Last Updated
11/20/2009	Paul R. Finnell	status change - dro...	final correlation	Barnes-Buse loams, 3 to 6 percent slopes	correlated	This ma...	11/20/2009 12:19:04
Barnes-Buse loams, 3 to 6 percent slopes	complex	additional	c9c5	1	MLRA07_Office	7-8 De	
Barnes-Buse loams, 3 to 6 percent slopes	complex	additional	d0rj	1	MLRA07_Office	7-8 De	
Barnes-Buse loams, 3 to 6 percent slopes	complex	additional	d006	1	MLRA07_Office	7-8 De	

3. **Population of the Datamapunit Certification table** –
The first step is to open the Correlation table of the new MLRA map unit, highlight the new MLRA DMU record, then use the “Load Related” to load the MLRA DMU:

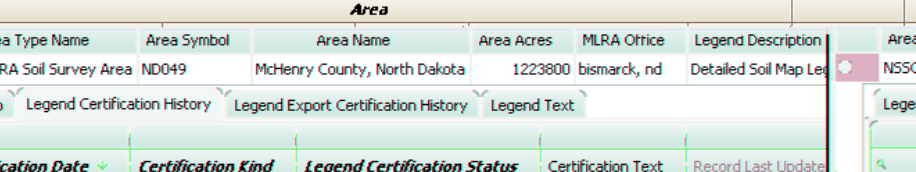
Seq	Mapunit Name	Kind	Status	National Mapunit Symbol	Farm Class
E	003014B				
E	021017B				
E	049024B				
E	073011B				
E	MLRA 55B - Barnes-Buse loams, 3 to 6 percent			554664	<input checked="" type="checkbox"/>

NASIS User Guide

The next step is to open the Data Mapunit table, then open its child tables to the Data Mapunit Certification History table. This table is to be populated by the Soil Survey Leader at the time of completion of the Quality Control and then again by the Soil Data Quality Specialist at the completion of the Quality Assurance. This table is used to identify the person responsible for the work and provide notes pertaining to the certification.

Legend		T Mapunit		T Legend Mapunit		T Data Mapunit	
DMU Description		Order of Mapping	Prod Index	DMU NASIS Site	NASIS Group	Object Last Updated	
MLRA 55B - Barnes-Buse loams, 3 to 6 percent				NSSC Data	Agromony	11/20/2009 12:38:40	
Component		Data Mapunit Certification History		Data Mapunit Crop Yield		Data Mapunit Text	
Reviewer							
NASIS User Name	Certification Date	Certification Kind	DMU Certification Status	Certification Text		Record Last Updated	
FIN	Finnell, Paul R.	11/20/2010	quality control	certified, all components	This new MLR...	11/20/2009 12:38:40	
E		07/15/2009	quality assurance	certified	This new MLRA mapunit and DMU is		
<							

4. Population of the Legend Certification table



The screenshot shows the 'Legend' window in the NASSIS application. The window is divided into two main sections. The top section, titled 'Area', displays a table of area information for 'Non-MLRA Soil Survey Area' (ND049) in 'McHenry County, North Dakota'. The bottom section, titled 'Legend Certification History', displays a table of certification history for the same area. A dialog box is open over the certification history table, showing a message: 'This data is now certified'. The dialog box has 'OK' and 'Cancel' buttons. The certification history table shows two entries: one for '07/15/2009' with 'quality assurance' and 'certified' status, and another for '11/20/2010' with 'quality control' and 'certified' status. The 'Legend' window also includes tabs for 'Legend Mapunit' and 'Legend Mapunit'.

Area Name	Area Type Name	Area Symbol	Area Acres	MLRA Office	Legend Description	Area Type NASIS Site Name
McHenry County, North Dakota	Non-MLRA Soil Survey Area	ND049	1223800	bismarck, nd	Detailed Soil Map Legend	NSSC Pangaea

Certification Date	Certification Kind	Legend Certification Status	Certification Text	Record Last Update
07/15/2009	quality assurance	certified		
11/20/2010	quality control	certified	This data is now certified	11/20/2009 12:23:00

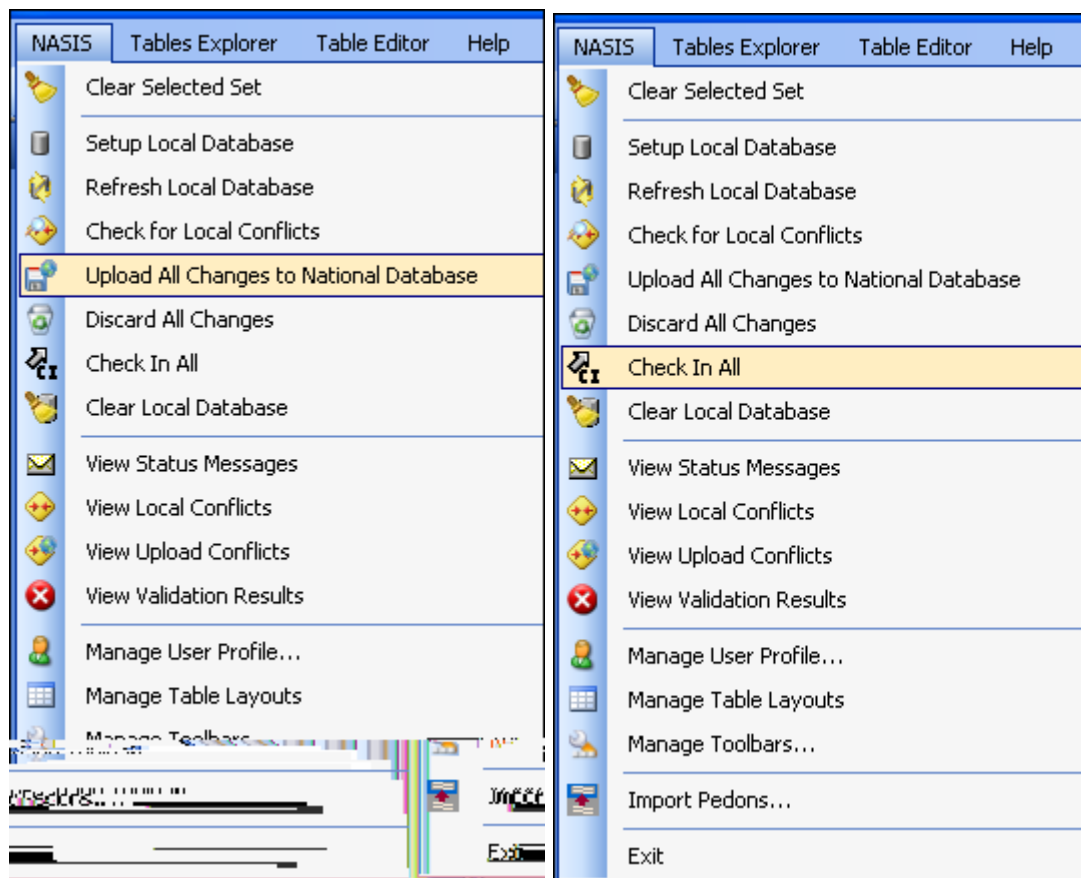
This data is now certified

OK Cancel

The Legend Certification table is designed to provide a listing of the certification history. The Legend Certification record can be copied, the Legends highlighted and the record pasted to all legends:

NASIS User Guide

6. The work is saved using “*Upload All Changes to National Database*” and then all data is checked back in using “*Check In All*”



7. And, the Legends and all associated project data are ready for the State Soil Scientist to submit to the Soil Data Warehouse.

Chapter 15: Queries Explorer

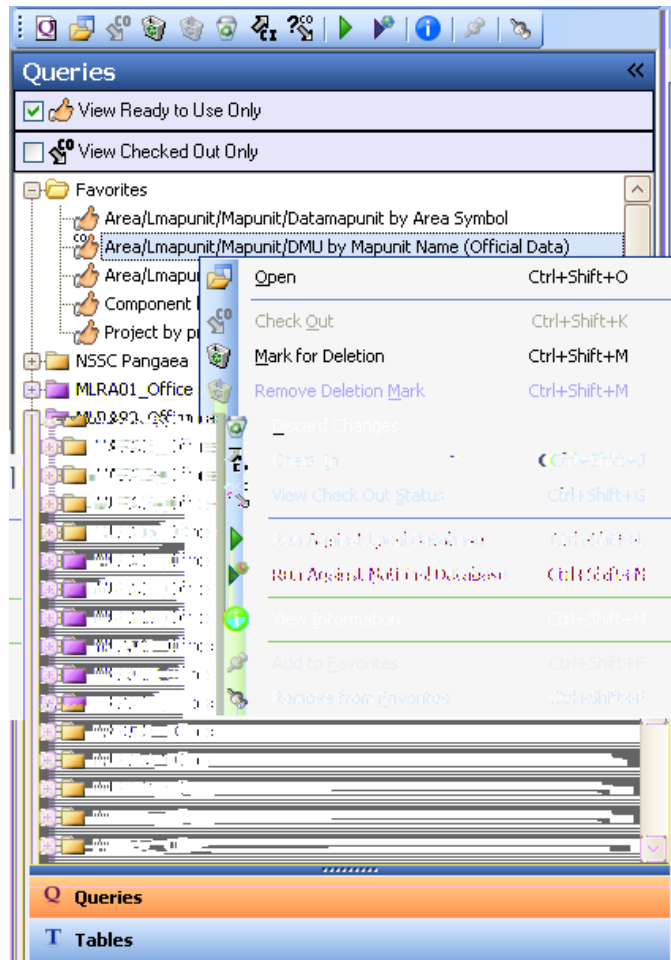
The Queries Explorer provides the ability to create, edit and manage queries. The Queries Explorer filters the queries based on

“**Ready for Use**” (thumbs up) or “**Checked Out**” (the ^{co} in the upper left corner of the query name – see Area/Lmapunit/Mapunit/DMU by Mapunit Name...). Queries from all NASIS sites are readily available.

The addition of the “Favorites” folder provides the user the ability to sift through all NASIS queries and add preferred queries to the users’ “Favorites” list. The Favorites folder is not filtered allowing a user to view all queries added to the Favorites folder regardless of the ready for use status.

All NASIS queries are downloaded and stored in the local database during the initialization of the NASIS6 database. The daily practice of refreshing the NASIS database synchronizes the local database with the national database and provides all new queries are available to the user in their local database.

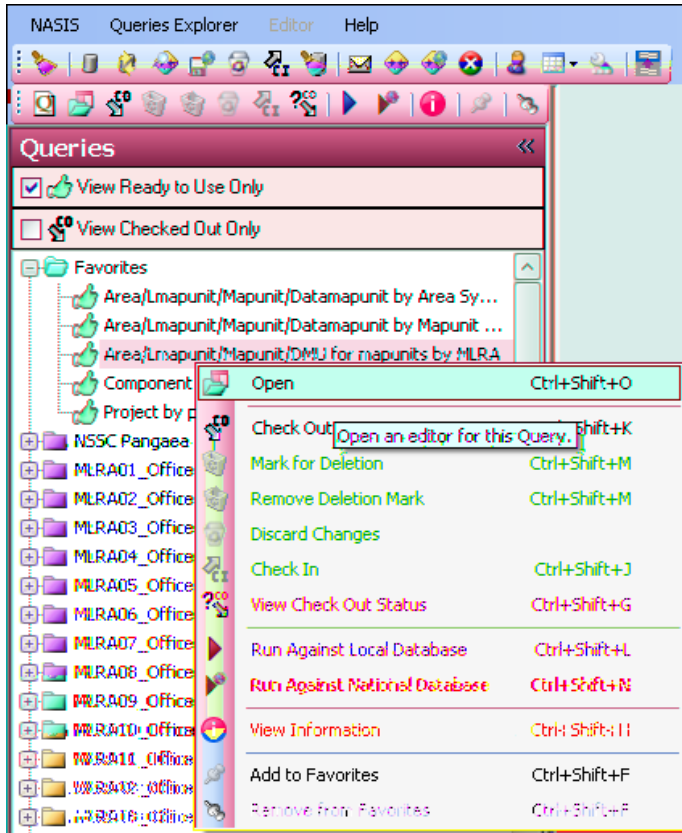
Right click on a query and the menu will appear. The menu allows the user to open the query in the Editor panel. Ownership rules apply to the Query similar to all NASIS data. The user must be a member of the permissions group in order to Check Out and edit the query. The menu provides the ability to run a query either against the national database, to populate the local database or against the local database to build the selected set. Opening the query into the Editor panel provides the user the ability to read the Query Description and to review the Query SQL. This information can be used by the user to determine the usefulness of the query. The last two options on the menu provide the ability to add or remove a specific query from the personal Favorites list.



Query Editor Panel

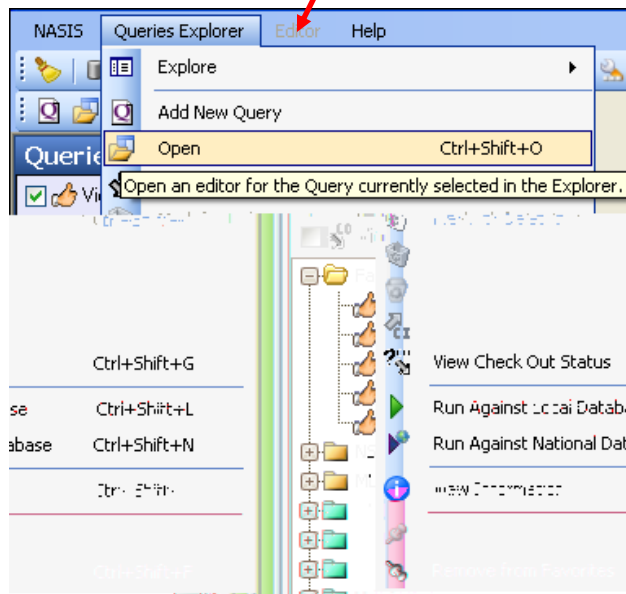
Open a query in the editor panel in order to view or edit the query. This is done by

1. using the “right click” menu, or
2. the Query Explorer menu, or
3. double-click on the query name.



Either menu, right click or Explorer, has options to open the Query in the Editor panel.

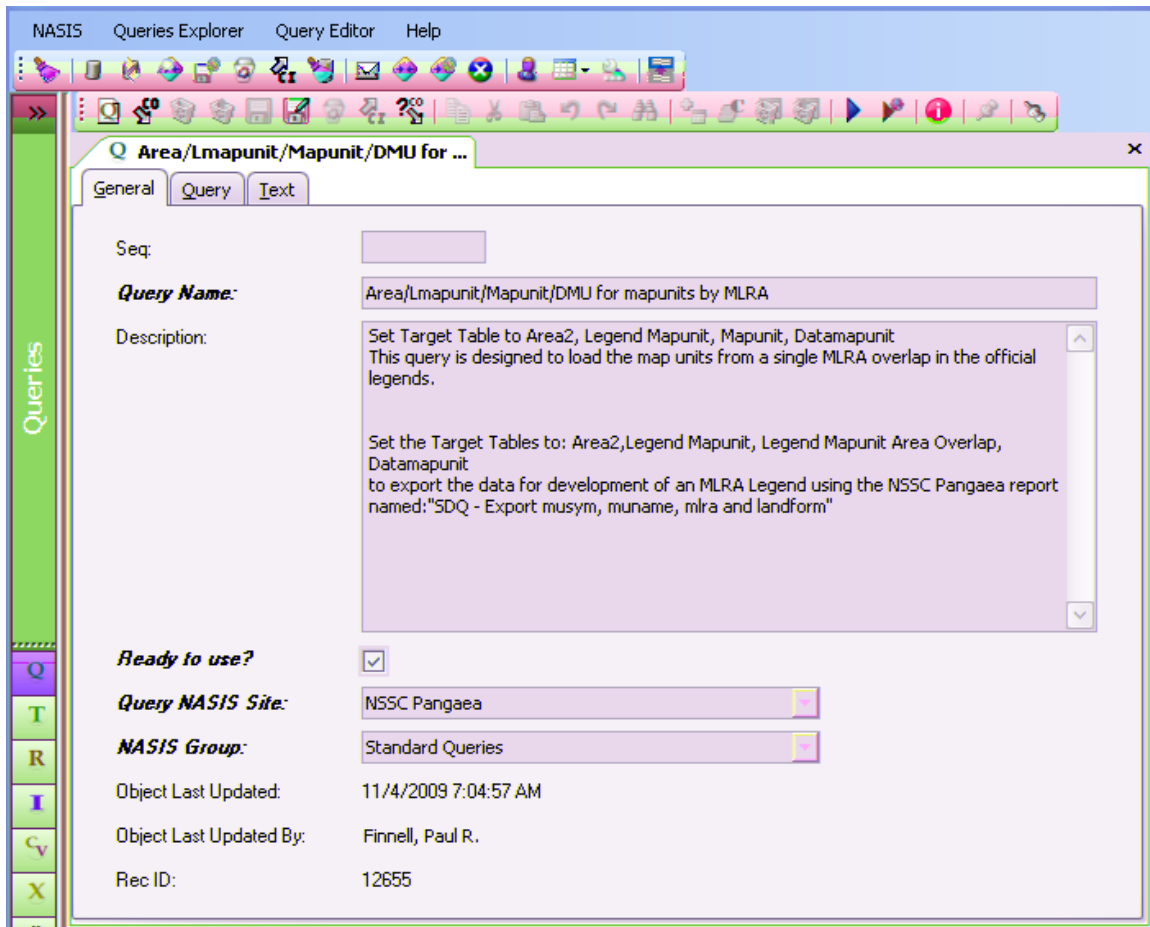
Notice the Query Editor menu is dimmed.



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As soon as the query appears in the Editor Panel, the Editor Menu becomes “Query Editor” and the Editor Toolbar appears above the query.

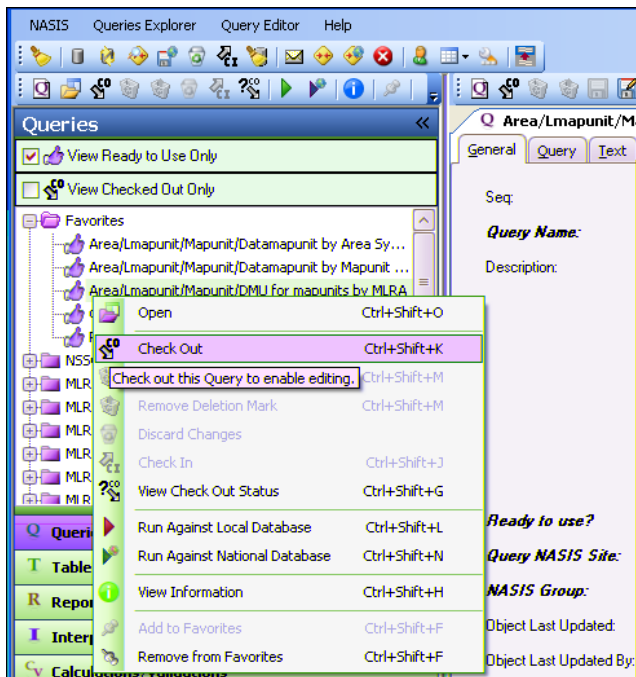
The 3 tabs organize the query information. The General tab includes the name, description, Ready to Use status, and the NASIS Site and Group that owns the query. The Query tab contains the Structured Query Language, or SQL. The Text tab provides for documentation on the edits made to the query. The Query Editor menu and the Query Editor Toolbar are available for editing or managing the query.



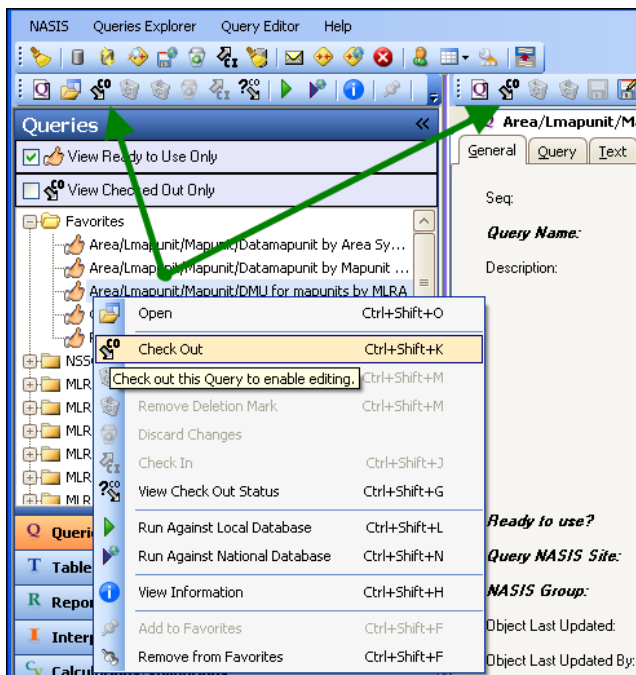
The query must be “Checked Out” before an edit is made. Many options are available to check out a query: the Right Click menu on the query name, or the Query Toolbars, or the Query Menus.

NASIS User Guide

Using the Right-Click menu

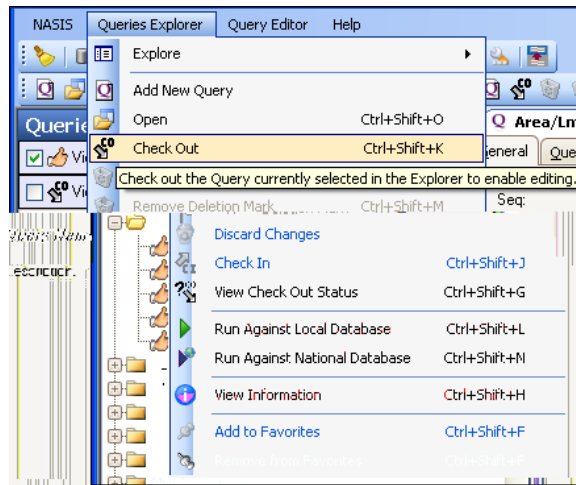


Using the Explorer Toolbar Icon or the Editor Toolbar Icon

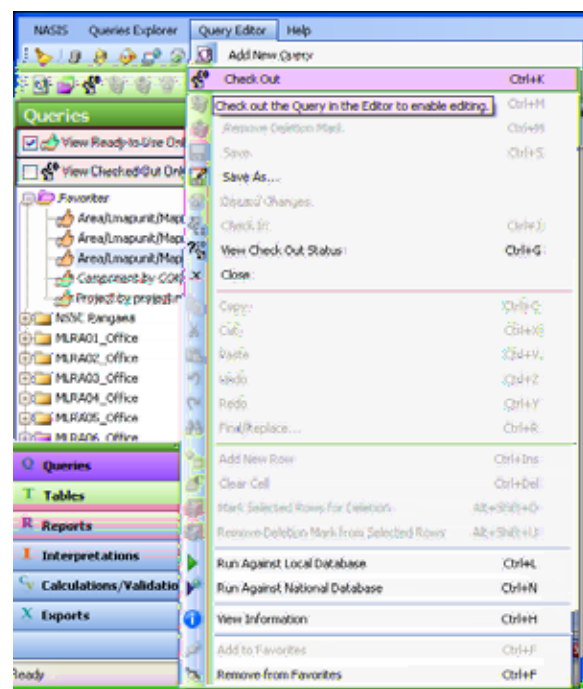


NASIS User Guide

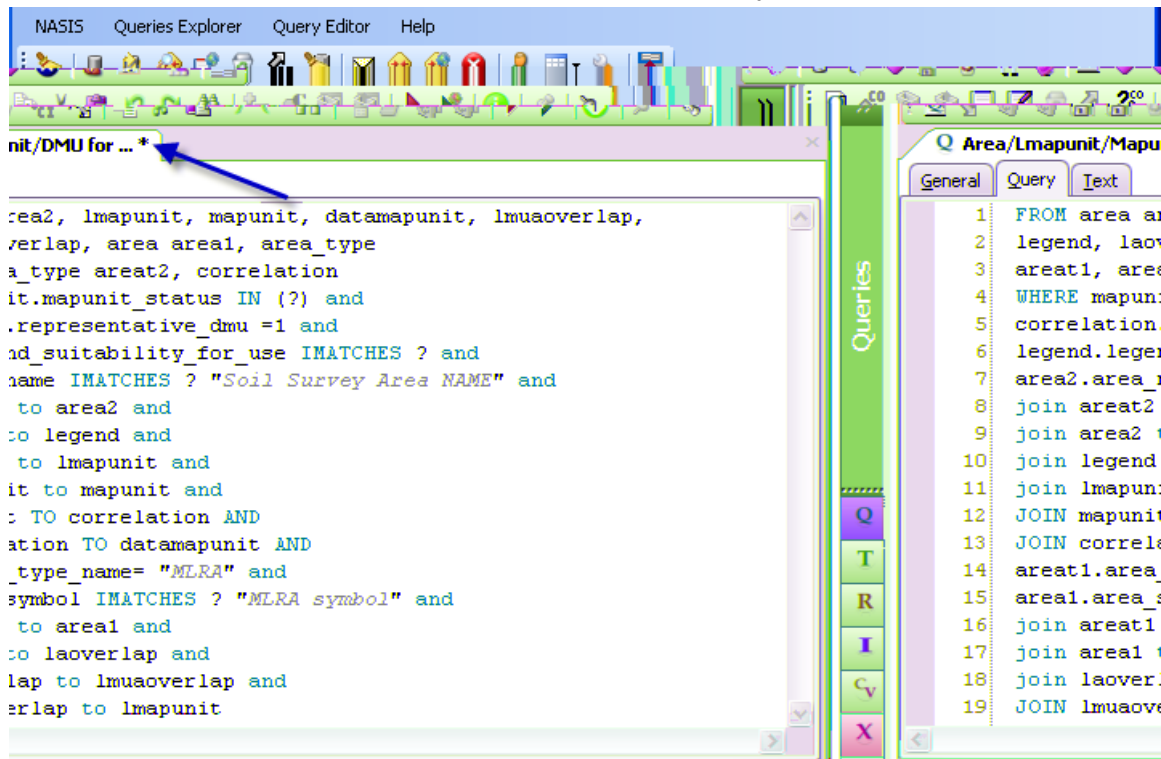
Using the Query Explorer



or Query Editor Menu

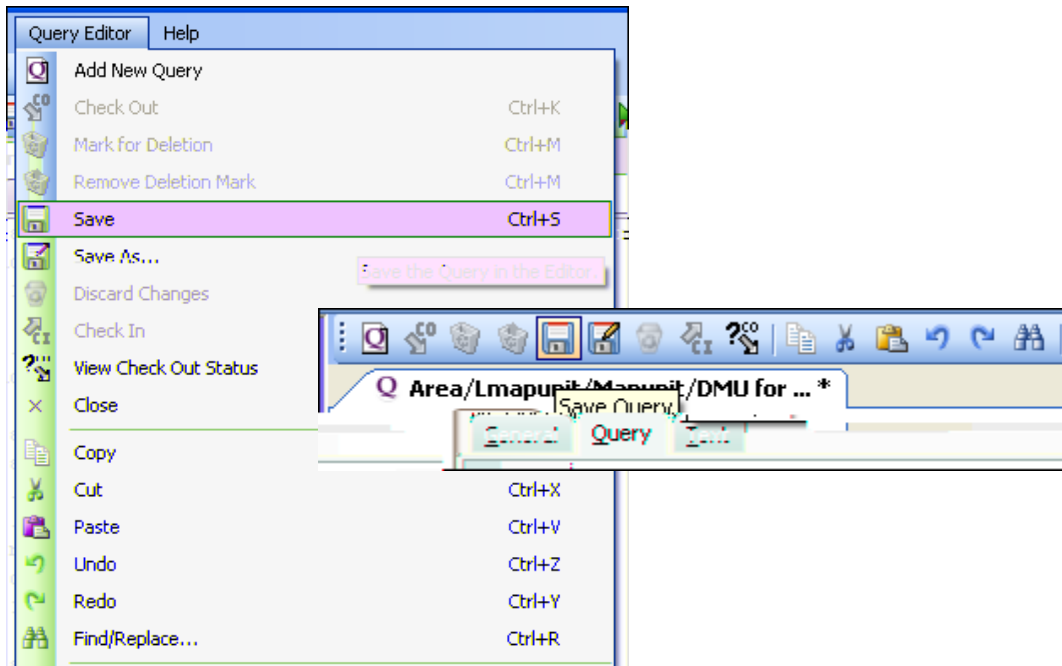


Once an edit is made, an asterisk will appear on the Query tab.

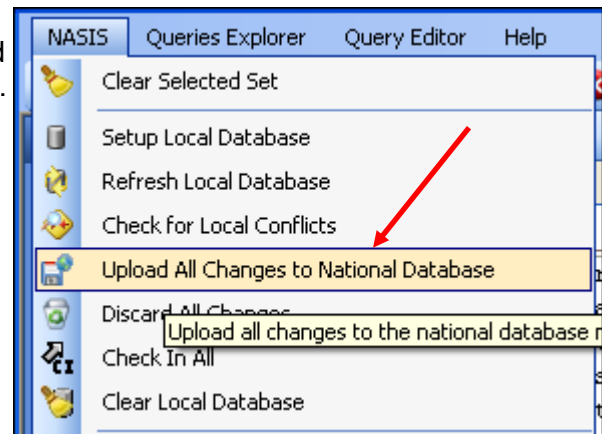


NASIS User Guide

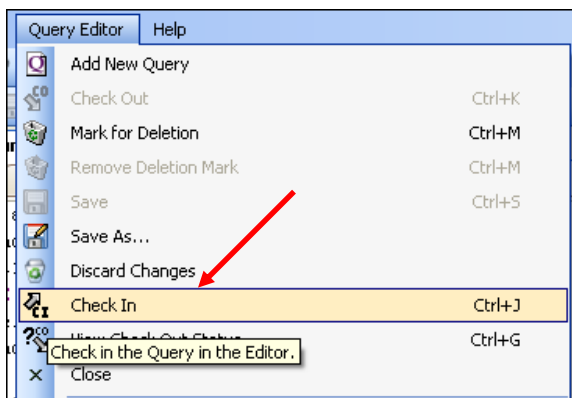
Editing features are available; Cut, Copy and Paste. The query is saved to the local database after edits are made. The Save option is available as an icon on the Query Toolbar and on the Query Editor. This save returns edits to the Local Database.



To complete the process, the edits are returned "Upload All Changes to the National Database".



The last step is to "Check In" the query using the Query Editor Menu or Toolbar:



The steps are:

1. Check Out the query
2. Edit query
3. Save query to the local database
4. Upload All Changes to National Database
5. Check In query

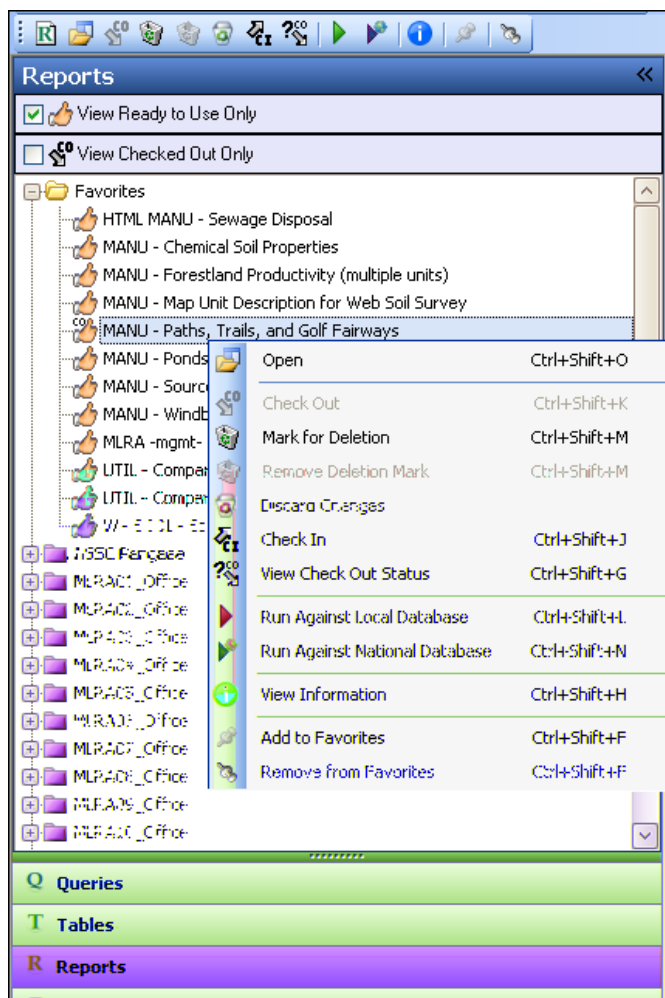
Chapter 16: Reports Explorer

NASIS allows the creation and printing of many kinds of reports including manuscript style tables, map unit description reports, and NASIS generated interpretations. The printing of standard reports is accomplished using the default printer specified on the computer. The procedures outlined in this lesson apply to all standard reports. In later lessons, there will be additional details on preparing interpretation data for reports.

The Reports Explorer is designed for the user to manage reports important to the user. The addition of the “Favorites” folder provides the user the ability to sift through all the reports on any NASIS site and to add preferred reports to the users’ “Favorites” list.

The Reports Explorer allows the user to filter the reports based on those reports that are set “Ready to Use” (thumbs up or thumbs down for not ready to use) or those reports the user has “Checked Out” (the ^{CO} in the upper left corner of the report name – see MANU – Paths, Trails, and Golf Fairways).

The Reports Explorer allows the user create and edit reports. It is also used to run a report either against the local database (the selected set) or against the national database.



Printing Reports

Building a Complete Selected Set

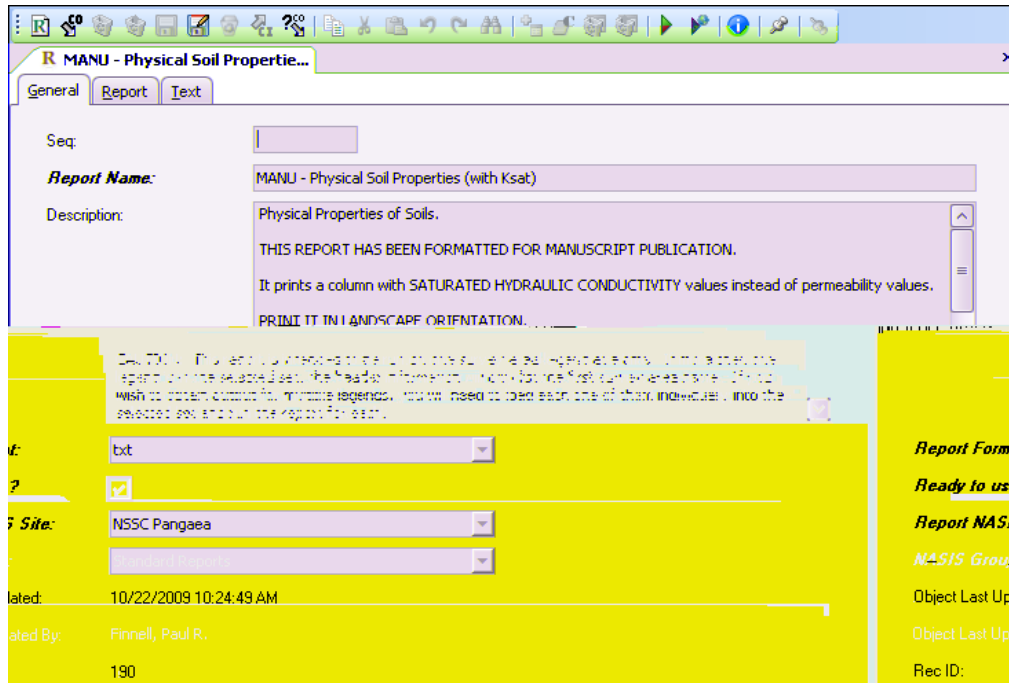
NASIS6 has the capability to run a report from the national database or on the selected set.

To run a report on the national database the report must include all conditional statements that filter the report to run on specific data within the national database.

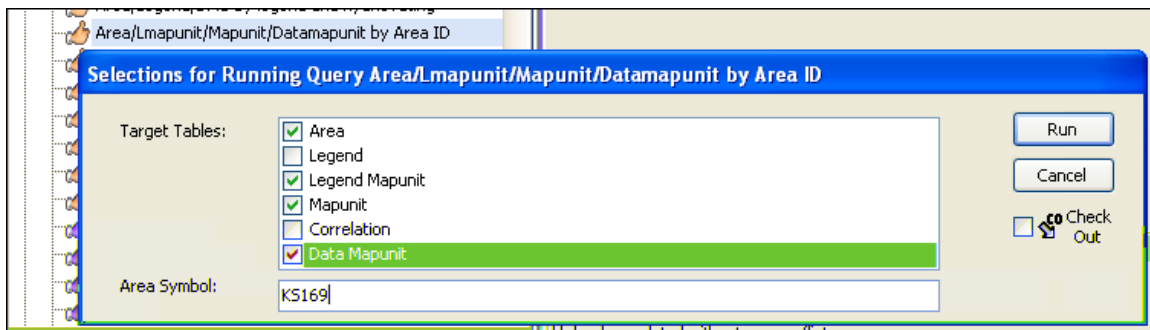
To run a report on the selected set, NASIS assumes that the necessary data has been loaded into the selected set in order to run the selected report. Reports in NASIS are based on data in the selected set. Although data in the tables can be selectively filtered, reports run on the selected set and not the filtered data set.

After the selected set is loaded, choosing a report and printing it is simply a matter of making selections from the Reports Explorer and running the report using “Run Against Local Database”. The task is building the selected set with all the data necessary for the report to complete. To understand the report needs, the user must have an Understanding of NASIS Objects (Chapter 3) and Building a Selected Set (Chapter 4).

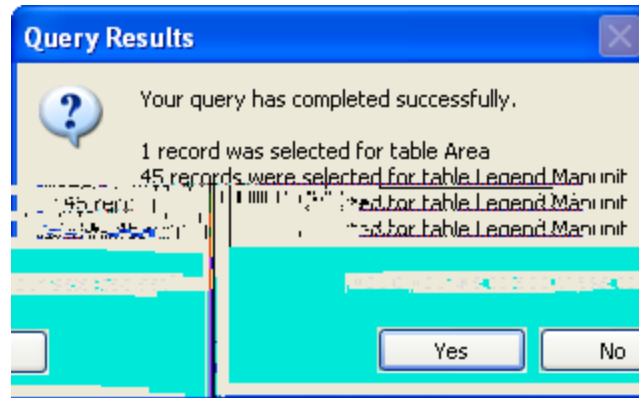
1. Clear the selected set by using the Whisk Broom icon on the NASIS toolbar.
2. Open the Reports Explorer.
3. Click on the plus sign next to **NSSC Pangaea** to display all reports owned by the national database. Scroll through the list and open the “**MANU – Physical Properties (with Ksat)**” report.



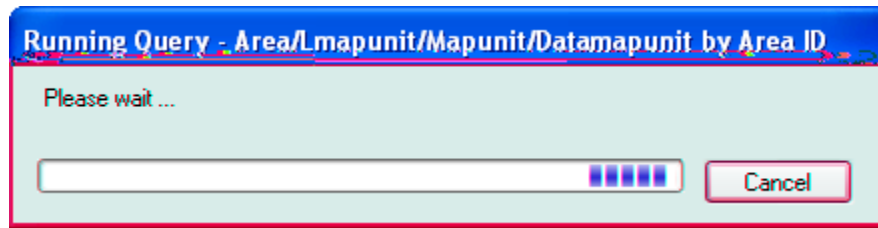
4. The **“General”** tab provides the Report Name and the Report Description.
5. Read the Report Description.
Currently, there are no data in the selected set. The next step is to query the local database and populate the Selected Set.
Note: The “Report Against Local Database” reports on records in the selected set, so data must be loaded prior to report a report being run.
6. On the NASIS **Queries Explorer**, select **NSSC Pangaea** and choose the **“Area/Lmapunit/Mapunit/Datamapunit by Area ID”**. Choose the target tables in the query name and choose a survey (e.g. KS169) that is within your local database, then click **Run**.



7. The dialog box will appear with the data that is available, choose **Yes**.



8. The query will run and load data into the selected set.



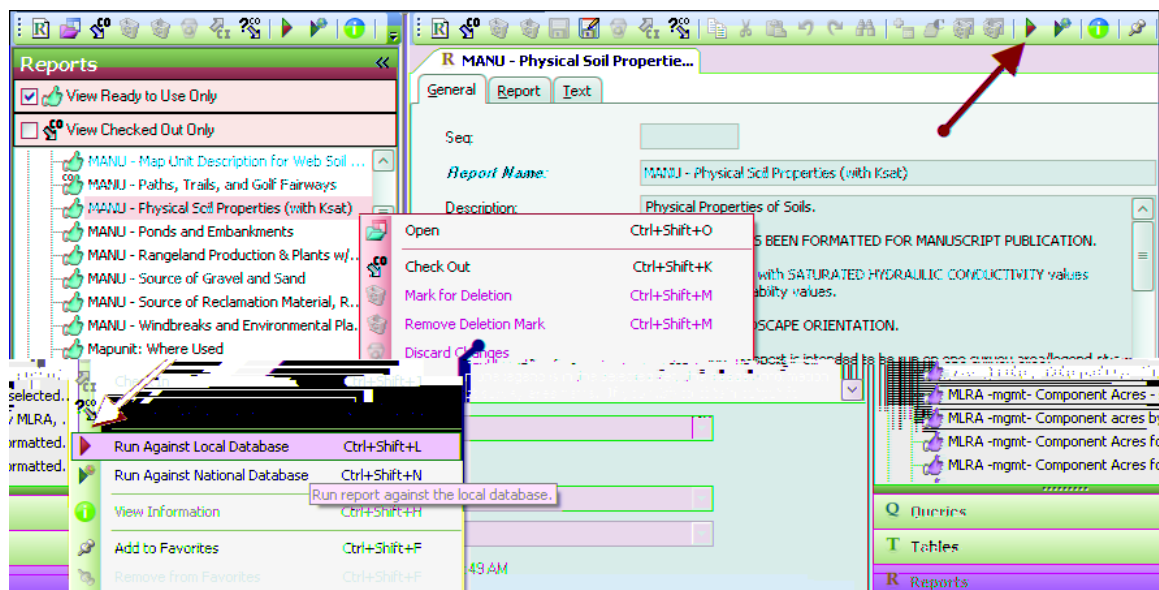
9. To verify the data, in the **Tables Explorer** panel, open the **Legend** table.
10. The four major objects are loaded with the data necessary to run a Manuscript report. It is necessary to verify the data needs of the report are met with the population of the selected set.

Printing a “txt” Report

In NASIS 6, the default computer printer is used for printing. No additional software or set up is necessary.

1. The selected set is populated with data in the Area, Legend, Mapunit and Data Mapunit objects. To print the manuscript report, either
 - a. return to the Report Explorer and choose the report, and Run Against Local Database, OR
 - b. return to the Reports Editor panel (if the report is open) and choose the tab associated with the specific report, and Run Against Local Database.

NASIS User Guide



2. Click on the **Green** triangle to run the report – from either the menu or toolbar.

NASIS User Guide

- The report will appear in the default “txt” file reader. In this image Notepad is the default text file reader. The user can choose Notepad, Wordpad or Word as the text file reader. (The default program is changed in Windows Explorer, Tools, Folder Options, and on the “File Types” tab choose TXT and then change the default program.)

MANU - Physical Soil Properties [with Ksat].txt - Notepad

File Edit Format View Help

Saline County, Kansas
Physical Soil Properties

Print Date: 10/22/2009

(Entries under "Erosion factors--T" apply to the entire profile. Entries under "Wind erodibility group" and "Wind erodibility index" apply only to the surface layer. Absence of an entry indicates that data were not estimated.)

Map symbol and soil name	Depth	Sand	Silt	Clay	Moist bulk density	Saturated hydraulic conductivity	Available water capacity	Linear extensibility	Organic matter	Erosion factors			Wind erodibility group	Wind erodibility index
										Kv	Kf	T		
2177: McCook-----	0-17	-14-	-69-	13-18- 20	1.20-1.40	4.23-14.11	0.20-0.24	0.0-2.9	2.0-4.0	.32	.32	5	4L	86
	17-60	-63-	-23-	10-14- 18	1.30-1.45	4.23-14.11	0.17-0.20	0.0-2.9	0.5-1.0	.43	.43			
Aquolis-----	0-60	--	--	--	--	0.01-10.00	--	--	--	--	--	--	--	--
Seimmon-----	0-18	1-10- 15	40-42- 50	40-45- 55	1.35-1.45	0.01-0.42	0.12-0.14	6.0-8.9	2.0-4.0	.28	.28	5	4L	86
	18-60	1-12- 15	30-40- 50	40-48- 55	1.35-1.45	0.01-0.42	0.08-0.12	6.0-8.9	1.0-2.0	.28	.28			
2179: McCook-----	0-14	-14-	-69-	15-18- 20	1.20-1.40	4.23-14.11	0.20-0.24	0.0-2.9	2.0-4.0	.32	.32	5	4L	86
	14-60	-14-	-72-	10-14- 18	1.30-1.45	4.23-14.11	0.17-0.20	0.0-2.9	0.5-1.0	.43	.43			
Aquolis-----	0-60	--	--	--	--	0.01-10.00	--	--	--	--	--	--	--	--
2288: Tobin-----	0-20	-10-	-68-	18-23- 27	1.30-1.40	4.23-14.11	0.20-0.24	2.2-4.1	1.0-4.0	.32	.32	5	4	48
	20-32	- 9-	-65-	18-27- 35	1.35-1.50	4.23-14.11	0.17-0.20	2.2-5.9	1.0-4.0	.32	.32			
	32-60	- 9-	-65-	18-27- 35	1.35-1.45	4.23-14.11	0.18-0.22	2.2-5.9	0.5-0.5	.43	.43			
Aquolis, ponded-----	0-60	--	--	--	--	0.01-10.00	--	--	--	--	--	--	--	--
Aquolis-----	0-60	--	--	--	--	0.01-10.00	--	--	--	--	--	--	--	--
2310: Bridgeport-----	0-14	-11-	-68-	14-21- 27	1.30-1.40	4.23-14.11	0.20-0.24	0.0-2.9	1.0-4.0	.32	.32	5	4L	86

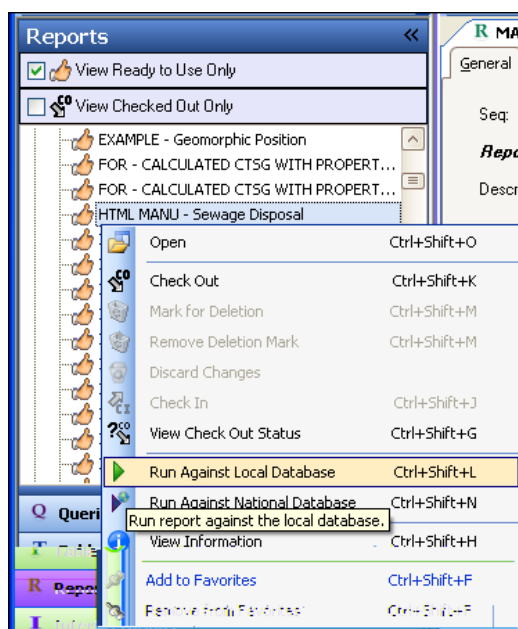
Figure 13-1. Sample Standard Report

Note: For best results set the “txt” reader to Notepad, with the Font set to Courier New.

- The report can be printed using the Notepad File, Print from the menu.
- The report can be saved as a “*.txt” file using File, Save As.

Printing a “html” Report

New to NASIS6 is the ability to create reports using html formatting. Few reports exist since this is new report formatting method. In the Reports Explorer, choose the national report named “HTML MANU Sewage Disposal”. Run the report using “Run Against Local Database”.



The results appear in the default web browser.

C:\Documents and Settings\All Users\Application Data\USDA\NRCS\ITS\Nasis6.x\Temp\HTML MANU - Se - M...

File Edit View Favorites Tools Help

Address C:\Documents and Settings\All Users\Application Data\USDA\NRCS\ITS\Nasis6.x\Temp\HTML MANU - Sewage Disposal.html

Sewage Disposal Interpretations

Saline County, Kansas

Map symbol and soil name	Pct. of map unit	EBG - Septic Tank Absorption Fields		EBG - Sewage Lagoons	
		Rating class and limiting features	Value	Rating class and limiting features	Value
2177:					
Mccook	100	Somewhat limited		Somewhat limited	
		Flooding	1.00	Flooding	1.00
		Slow water movement	0.50	Seepage	0.50
Aquolls	0	Not rated		Not rated	
Solomon		Somewhat limited		Somewhat limited	
		Flooding	1.00	Ponding	1.00
		Ponding	1.00	Flooding	1.00
2179:					
		Slow water movement	1.00		
2179:					
Mccook		Somewhat limited		Somewhat limited	
		Flooding	1.00	Flooding	1.00
		Slow water movement	0.50	Seepage	0.50
Aquolls	0	Not rated		Not rated	
2266:					
Tobin	100	Somewhat limited		Somewhat limited	
		Flooding	1.00	Flooding	1.00
		Slow water movement	0.50	Seepage	0.50
sed	0	Not rated		Not rated	
	0	Not rated		Not rated	
2310:					
Bridgeport	100	Somewhat limited		Somewhat limited	
		Slow water movement	0.50	Seepage	0.50
		Flooding	0.40	Flooding	0.40

My Computer Done

Chapter 17: Exports Explorer

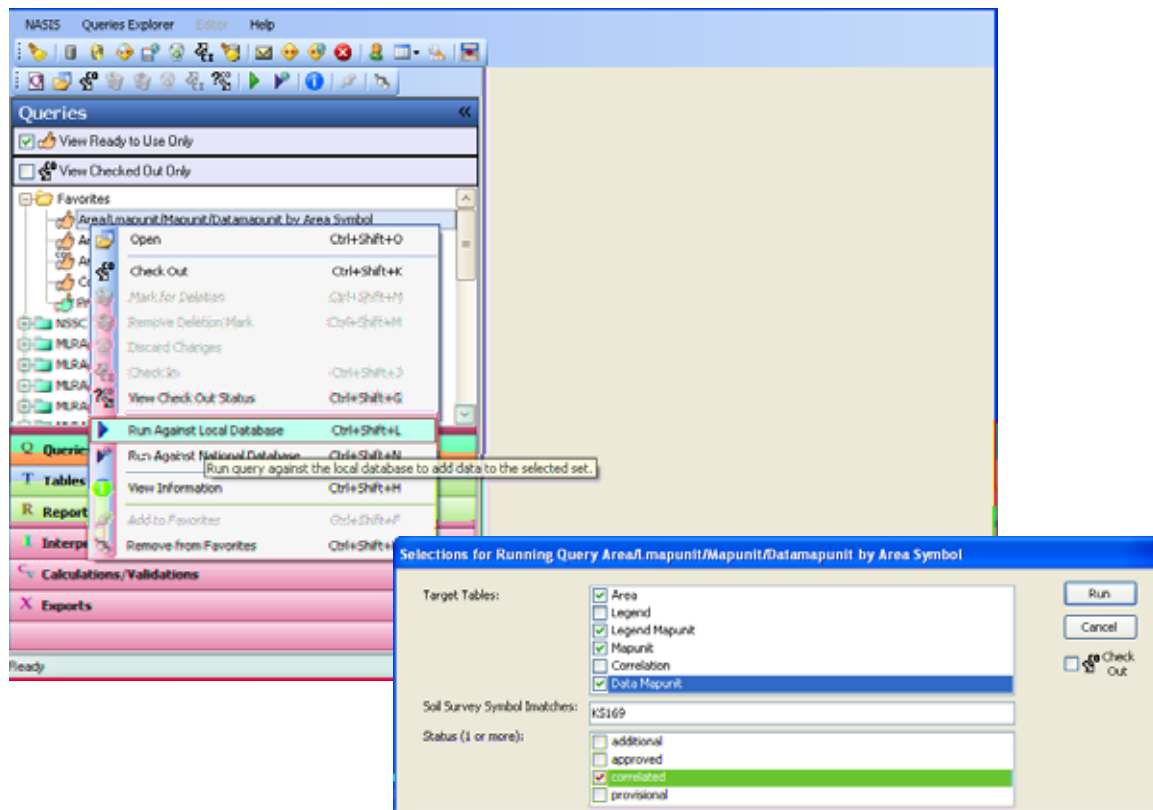
Overview of Exports

NASIS provides a SSURGO Version 2 export format that can either be sent to the Staging Server or downloaded for importing into the SSURGO template. The export requires that a selected set be built containing the data to be exported.

- At a minimum, the legend(s) for the soil survey must be loaded to create the export. If only Legends are loaded, the export can be generated for the survey(s) by completing the dialog screens that enables NASIS to select the mapunits, data mapunits, and components to be exported from the permanent tables.
- The selected set can be fully populated based on specific user requirements allowing more control over the records selected for export.

Selecting Records for the SSURGO Format

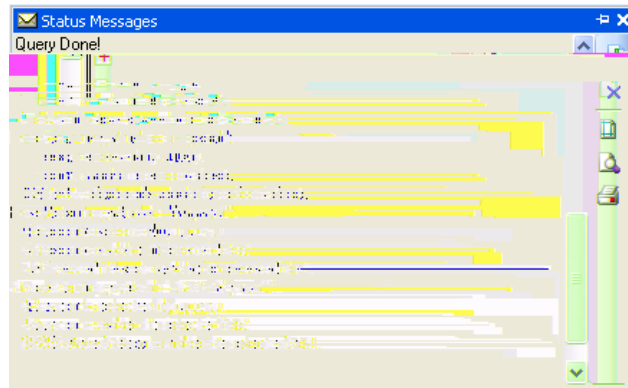
Begin a SSURGO format export by identifying the soil survey(s) to export. In this scenario, a query will be run to load all data associated with the soil survey. Use the national query “**Area/Lmapunit/Mapunit/Datamapunit by Area Symbol**” to load the soil survey legend and all associated data into the selected set.



NASIS User Guide

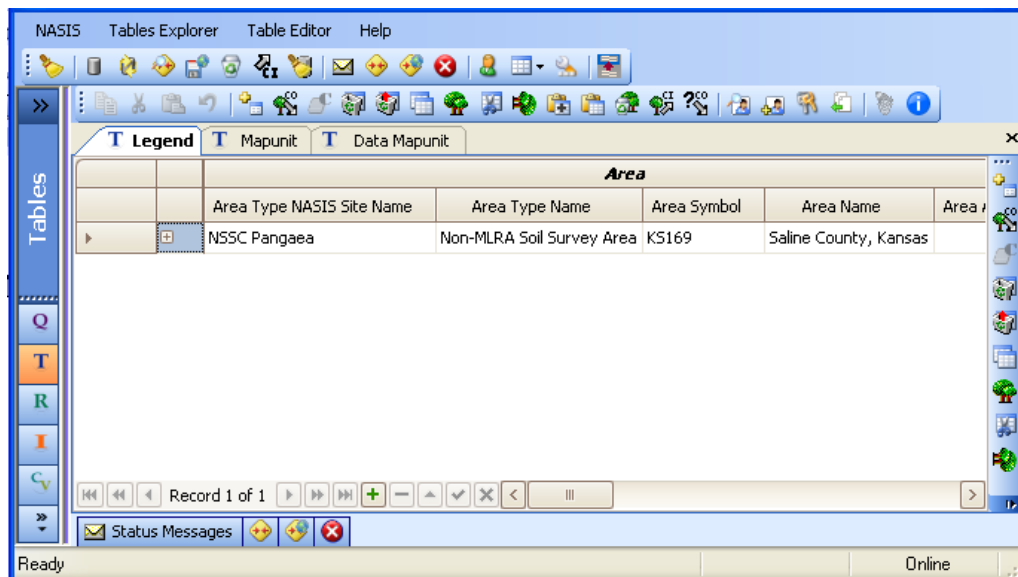
This scenario will load all the data associated with survey “KS169”, choosing only the correlated mapunits.

Note: A dialog box will appear displaying the rows to be loaded and this same information will appear in the Message panel:



Pay attention to the number of rows added. Depending on the query, it could load multiple legends for a given survey area. Unless the intent is to export multiple legends, it is best to use a query that restricts selections by survey status. The data needs to be complete and carefully selected to obtain the desired export results.

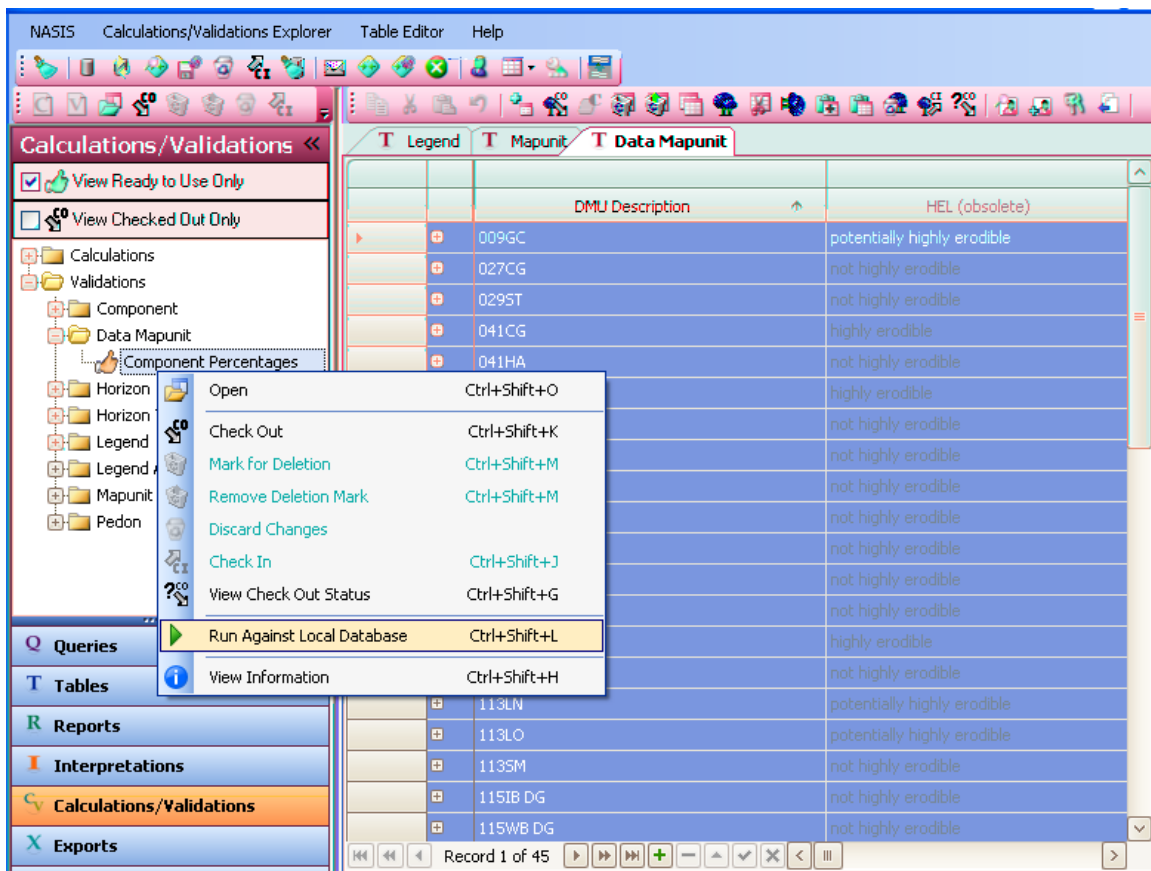
After the data are loaded, open the Legend, Mapunit, and Data mapunit tables and verify the data. Loading all the data based on the user needs provides full control in selecting the specific data to export.



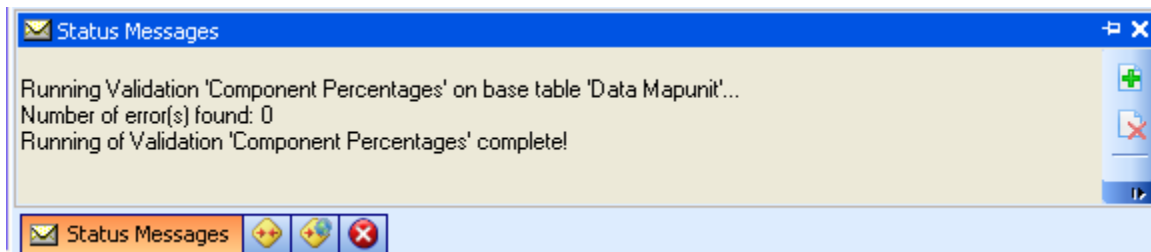
Running Validations

Before running an export, it is required that validations be run against the data in the selected set. This step is mandatory for all data being submitted to the Staging Server.

- Open the Data Mapunit table in the Editor Panel.
- Highlight all rows using the Ctrl+a hotkey.
- Then open the Calculations/Validations object in the Explorer panel
- Open the Validations tree and select the Data Mapunit table
- Right Click on Component Percentages and choose “Run Against Local Database”

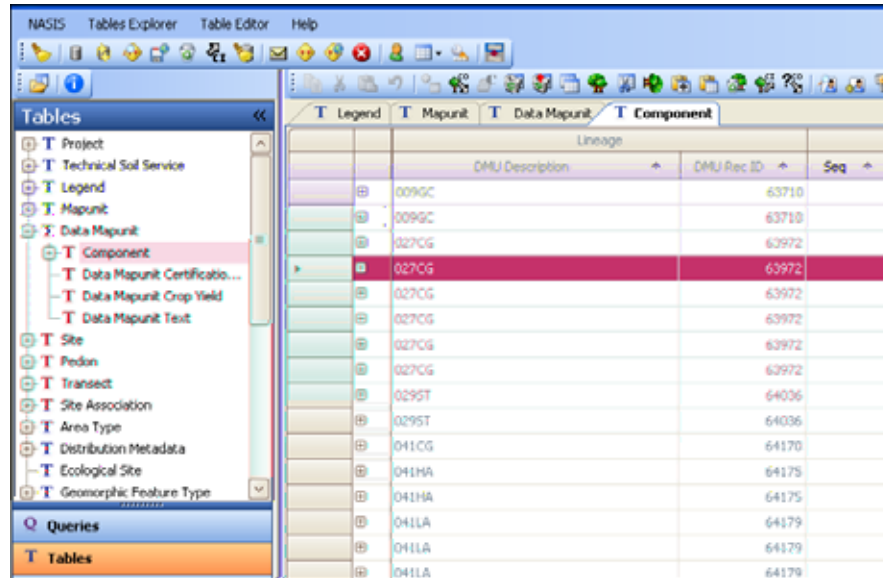


If the validation passes, the Message panel will contain the results:

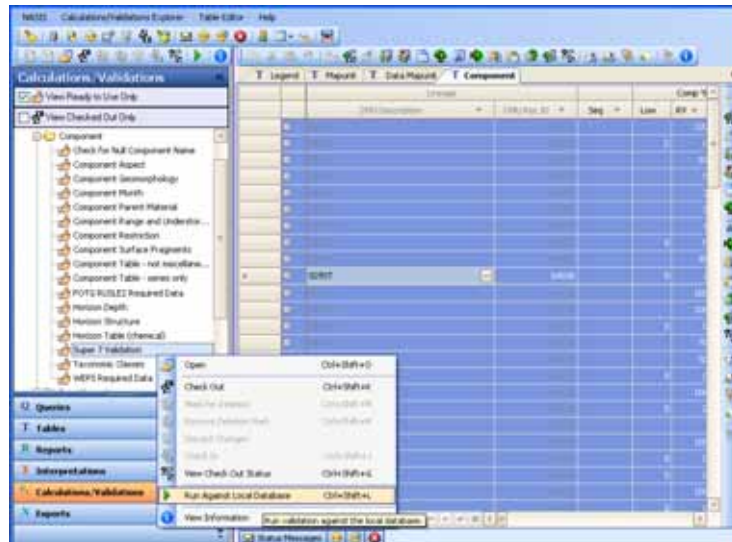


NASIS User Guide

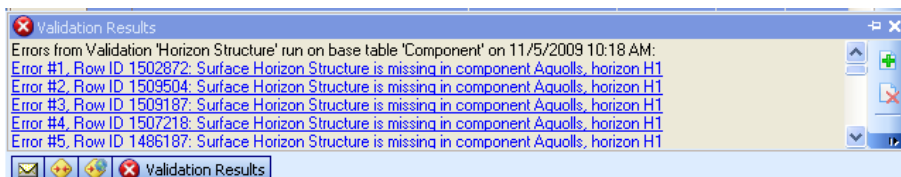
Continue this process for the Component and Horizon tables.



- Highlight all rows using the Ctrl+A hotkey.
- Then open the Calculations/Validations object in the Explorer panel
- Open the Validations tree and select the Component table
- Right Click on each Validation and choose “Run Against Local Database”
- Continue this process with all tables and validations before exporting data



Validation errors appear in the Message Panel in Validation Results. Click on the hyperlink to return to the data record in error. Edits require data to be checked out.



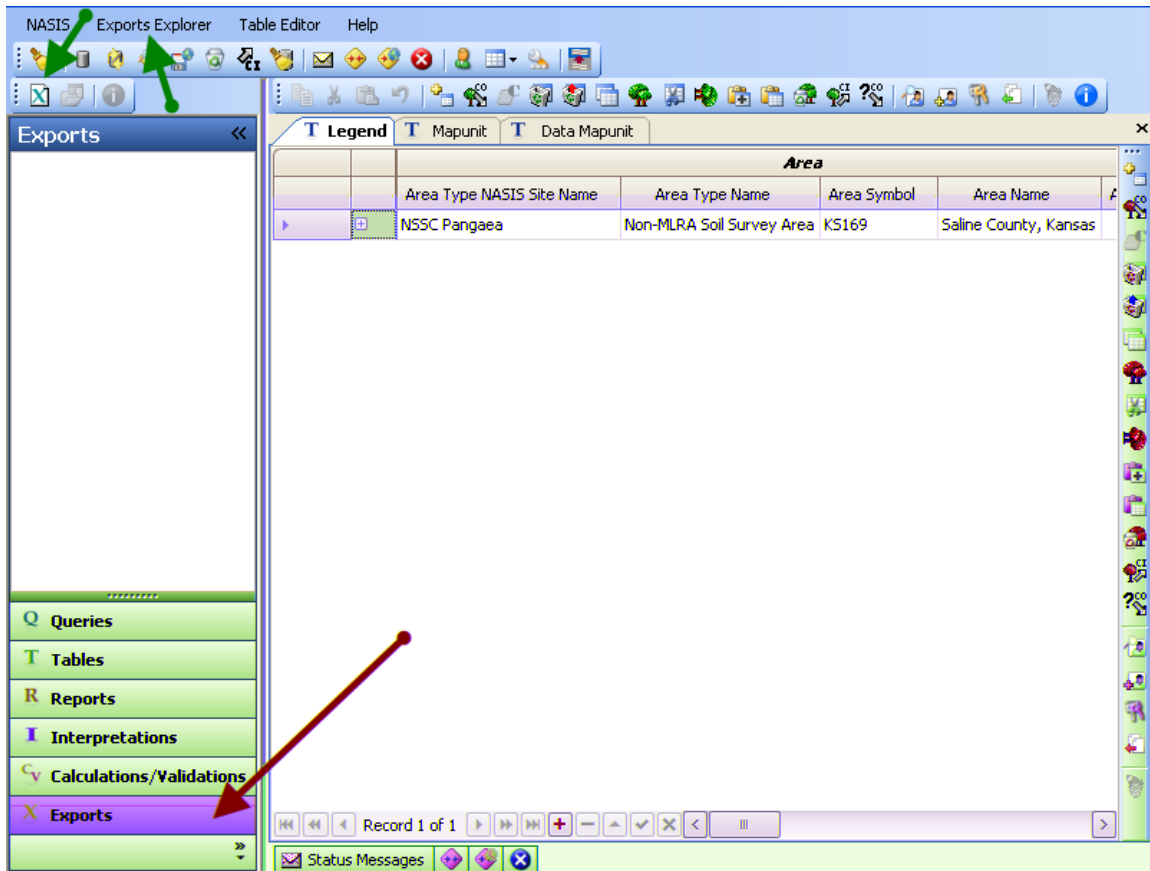
Open Exports Explorer and Select Criteria

The Exports Explorer is opened by choosing the “Exports” object in the Explorer panel.

Click on the “Exports” object in the Explorer panel.

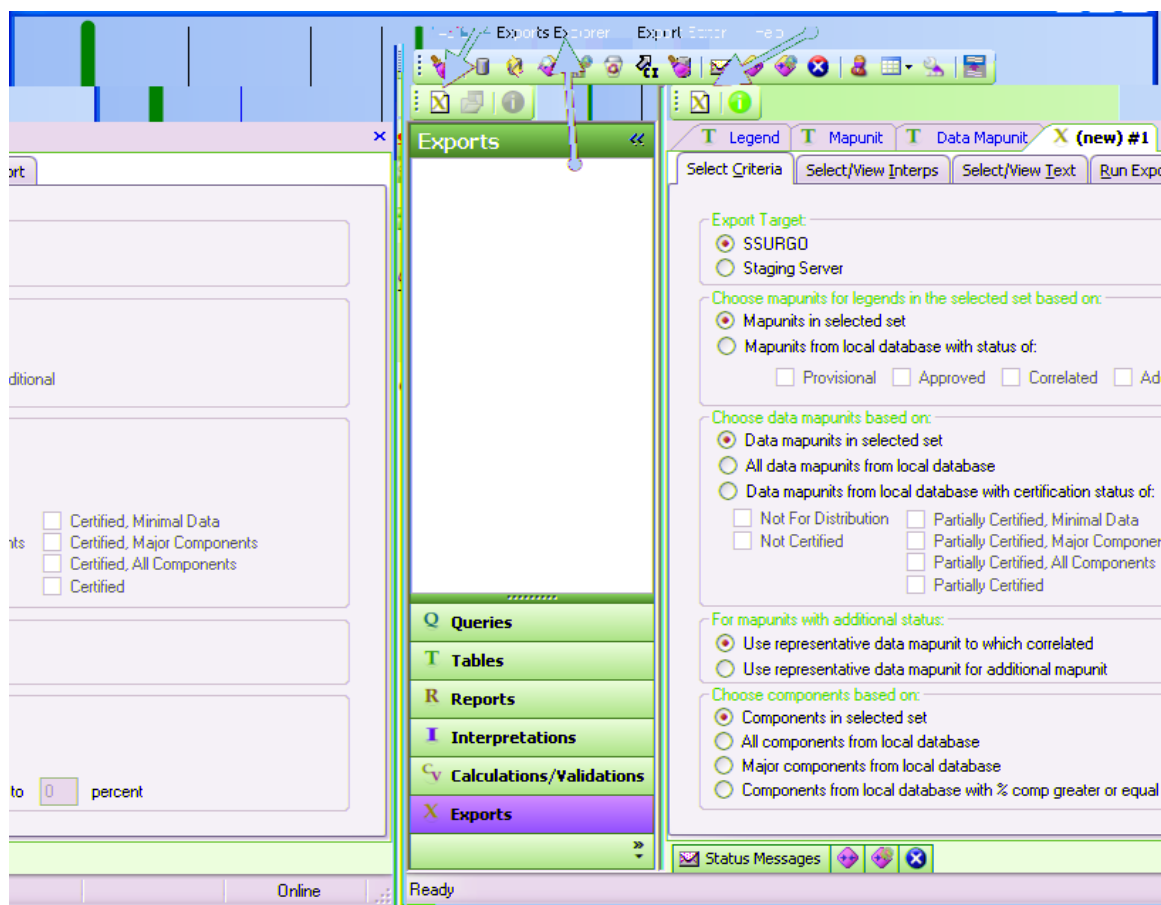
The Explorer menu changes its name to “Explorer Editor” and the Explorer toolbar changes to the Exports format. The “Add New Export” icon appears on the Explorer toolbar and the menu option is available on the Exports Explorer menu.

Select the “New Export” icon.



NASIS User Guide

Notice the menus and toolbars change to the “Exports” format.



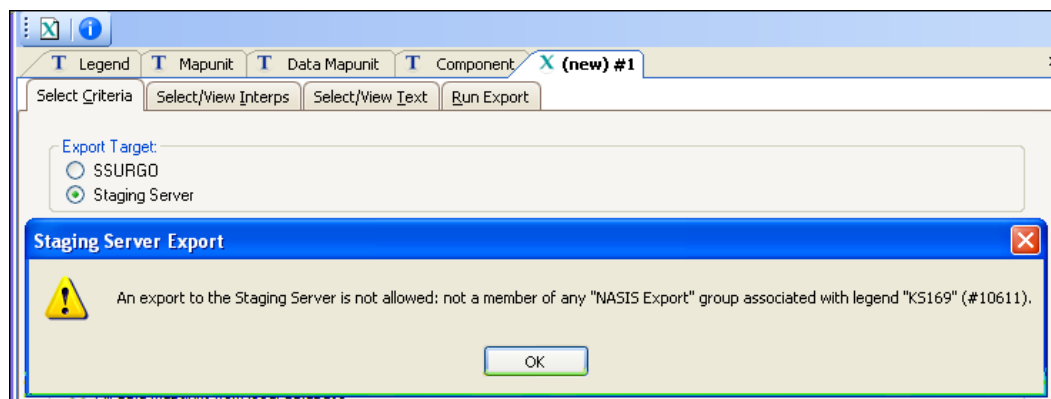
In this scenario, the legend and its mapunits and their data mapunits were selected using a query to load the specific data for the export. Referring to the image above:

1. Export Target:

Select **SSURGO** format.

All users are authorized to export using the **SSURGO** target.

The State Soil Scientist (or designee) is the only authorized user allowed to export to the **Staging Server**. The following will appear for unauthorized users.



2. Choose mapunits for legend in the selected set based on:

Two choices are available for mapunits,

- a. **“Mapunits in selected set”** is chosen because a query was used to load all data based on the users’ specifications.
- b. If the Legend is the only data in the selected set, click the button preceding **Mapunits from local database with status of:**

The user then chooses the mapunit status to export: **Provisional, Approved, Correlated,** and/or **Additional.**

Note: The Export Dialog allows multiple selections for the different mapunits but the user must carefully consider the value of exporting Additional and Provisional map units.

3. Choose data mapunits based on:

Three choices are available for mapunits,

- a. **“Data mapunits in selected set”** is chosen because a query was used to load all data based on the users’ specifications.
- b. **“All data map units from the local database”** is used if the local database is limited to only the data mapunits to be exported.
- c. **“Data mapunits from the local database with a certification status of”:** is used to specify data mapunits based on their certification status in the local database that will be exported.

4. For mapunits with additional status

Two choices are available for additional mapunits,

- a. **“Use representative data mapunits to which correlated”** is used to select the DMU associated with the map unit to which the additional map unit is correlated. To be “Additional” a map unit must be correlated to another map unit. This choice exports the data for the map unit the additional is correlated to.
- b. **“Use representative data mapunits for additional mapunit”:** is used to export the DMU that is linked to the additional map unit.

5. Choose components based on:

Four choices are available for mapunits,

- a. **“Components in selected set”** is used if the selected set is fully populated based on the users specifications.
- b. **“All components from the local database”:** is used if the local database is limited to only the data mapunits to be exported.
- c. **“Major components from the local database”:** is used to specify major components in the local database that will be exported.
- d. **“Components from local database with % composition greater to or equal to percent”:** The component selections allow selection of components by percent of composition. Percent composition is not always an indicator of component significance. For example, in the case of hydric soils using percent of composition may eliminate important components. Use this option with caution.

Select/View Interpretations

Tabs are available to complete the export process. Click on the “Select/View Interps” tab to specify the interpretations to apply to the export data. The interpretations can be from the national or local databases, or any combination of these. .

NASIS Site: NSSC Pangaea ☒ Ready for Use Only

Select Interpretations to include:

- ENG - Construction Materials; Topsoil
- ENG - Daily Cover for Landfill
- ENG - Dwellings W/O Basements
- ENG - Dwellings With Basements
- ENG - Hydrologic Soil Group Generator
- ENG - Lawn, Landscape, Golf Fairway
- ENG - Local Roads and Streets
- ENG - Sanitary Landfill (Area)
- ENG - Sanitary Landfill (Trench)
- ENG - Septic Tank Absorption Fields**
- ENG - Sewage Lagoons
- ENG - Shallow Excavations

Rule Description:

Summary:

Soils can be a non-member, partial member or complete members of the set of soils that are limited for use as "Septic Tank Absorption Fields". If a soil's property within 150 cm (60 inches) of the soil surface has a membership indices greater than zero, then that soil property is limiting. The interpretive rating assigned is the maximum membership indices for one or more of the soil interpretive properties that comprise the "Septic Tank Absorption Fields" interpretive rule. Minor restrictive soil features are identified but not considered as part of the overall rating process. These restrictive features could be important factors where the major restrictive features are overcome through design application.

Add to List Remove from List Clear List

NASIS Site Name	Rule Name
NSSC Pangaea	DHS - Catastrophic Mortality, Large Animal Disposal, Pit
NSSC Pangaea	DHS - Catastrophic Mortality, Large Animal Disposal, Trench
NSSC Pangaea	DHS - Potential for Radioactive Bioaccumulation
NSSC Pangaea	DHS - Potential for Radioactive Sequestration
NSSC Pangaea	DHS - Rubble and Debris Disposal, Large-Scale Event
NSSC Pangaea	DHS - Site for Composting Facility - Subsurface
NSSC Pangaea	DHS - Site for Composting Facility - Surface
NSSC Pangaea	DHS - Suitability for Clay Liner Material
NSSC Pangaea	DHS - Suitability for Composting Medium and Final Cover
NSSC Pangaea	ENG - Construction Materials; Gravel Source
NSSC Pangaea	ENG - Construction Materials; Reclamation

Maximum Reasons: 3

For staging server exports:

Required Interpretations:

- All NSSC Pangaea **DHS** interpretations
- All NSSC Pangaea **MIL** interpretations

Strongly suggested Interpretations:

- All NSSC Pangaea **ENG** interpretations
- All NSSC Pangaea **URB/REC** interpretations
- NSSC Pangaea **WMS** interpretations where appropriate

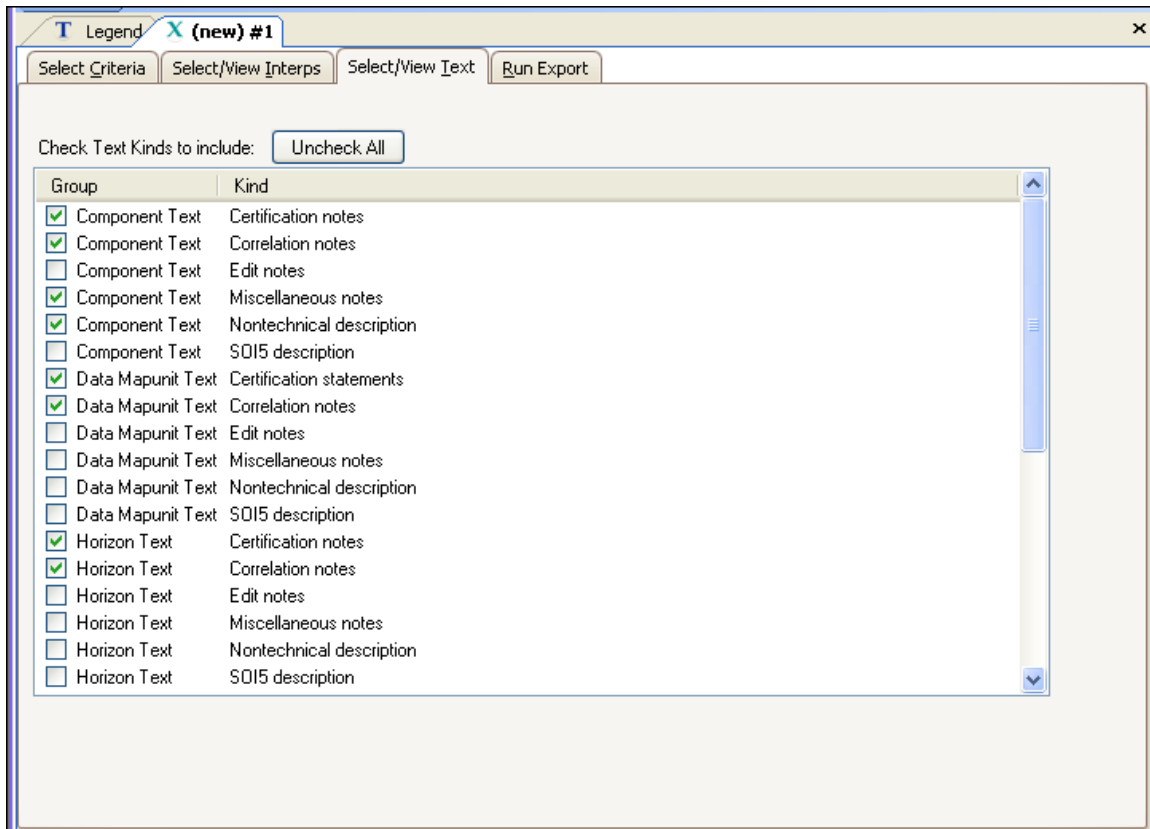
These suggestions are based on specific customer requests and based on needs of national users requesting consistent interpretation delivery for all soils data regardless of political boundaries.

Maximum Reasons is the maximum number of rating reasons reported for each interpretation. Maximum Reasons is set to 5 on Staging Server Exports. Maximum Reasons can be changed on SSURGO exports.

NASIS User Guide

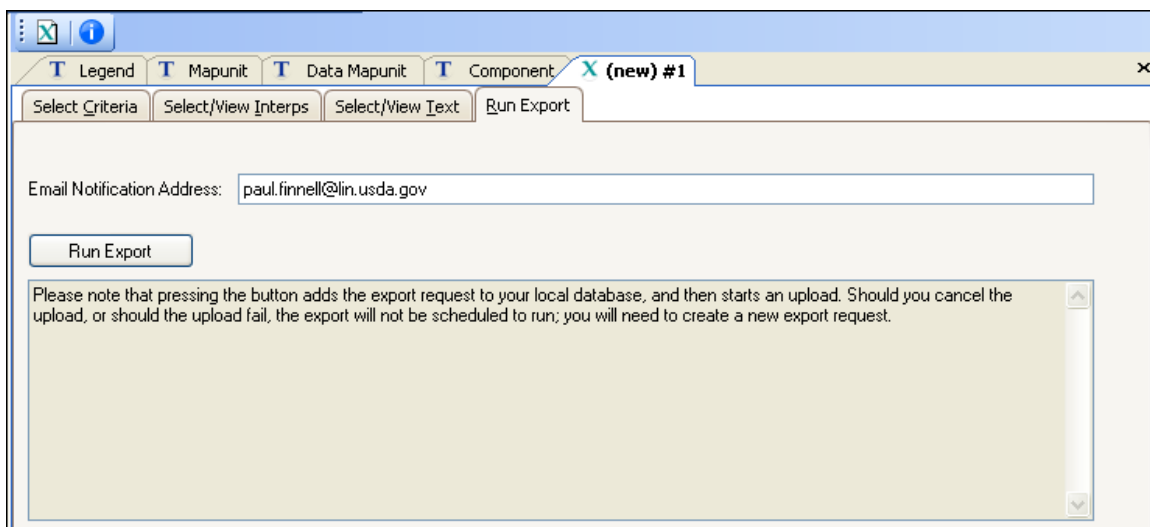
Select/View Text

Choose the Select/View Text tab to select the text fields to be exported.



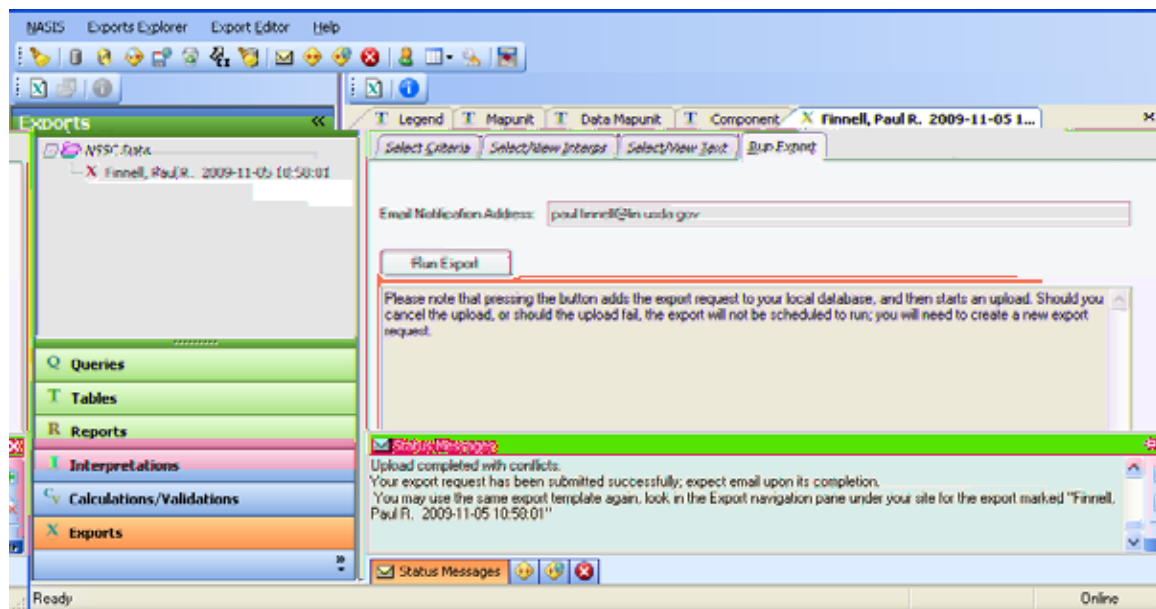
Run Export

Click on the “Run Export” tab to complete the process:



When an Export is Run

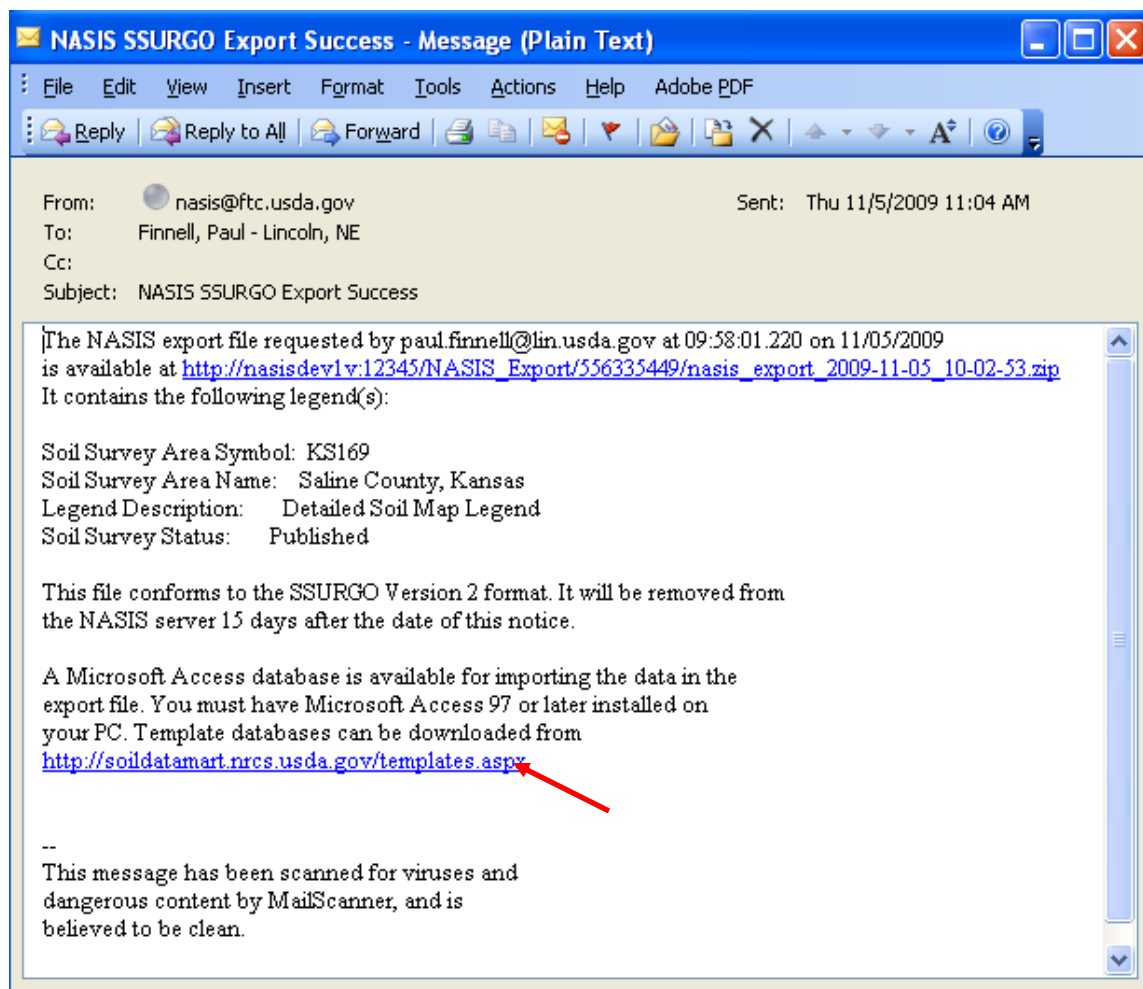
When the export is started (when the Run Export is clicked in the Export dialog) the main export process saves the export parameters to the local database. All data is then uploaded to the national server. The actual export is run from the national server. This allows the user to perform other NASIS tasks, exit NASIS, or even logoff of a NASIS session without impacting the export process. Exporting multiple surveys or a large survey should be initiated late in the day to run after hours.



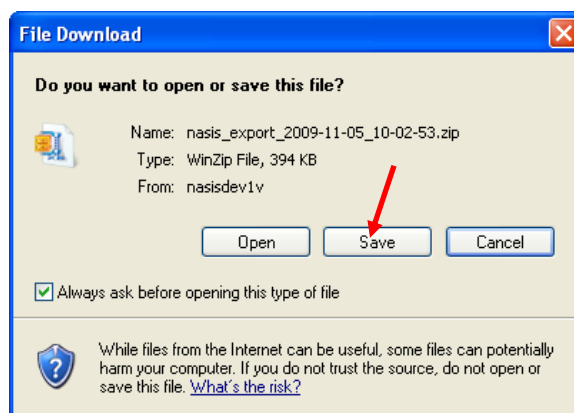
The export is saved to the Exports Explorer and becomes available for future use as shown in the image above.

Locating the NASIS Export File

The download location and filename is included in an email notifying the user that the download has completed and where the data is located. An example of the email:



The user clicks on the hyperlink and the file can then be saved to their local computer.



NASIS User Guide

The NASIS data is written to ASCII pipe-delimited text files where there is one text file corresponding to each SSURGO format database table. These text files are in a Microsoft Access compatible format. These text files are packaged into a single file that is then compressed.

Note: Export files are large and can accumulate quickly. They are automatically deleted after 15 days. They can also be overwritten, if the same state directory and file name is used in subsequent exports.

NASIS SSURGO Export Errors

Processing errors

Errors generated during the SSURGO export process are displayed using an error message dialog and are also written to the NASIS error log file. In addition, an email message is sent to the user.

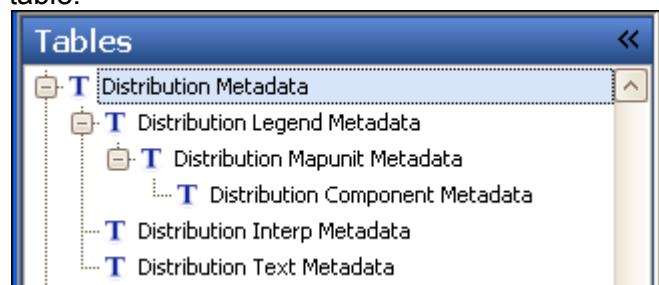
Avoiding data selection errors

Most data selection errors will not produce any processing errors if the data has been validated prior to exporting. The user must check the export to be sure it includes the expected data. Most errors are easily avoided by carefully selecting the data and understanding how the export chooses included data.

Distribution Metadata

A completed export produces distribution metadata that is stored in the same named table. The parent table is *Distribution Metadata* and describes the criteria used to export the data. Children of this table include the *Distribution Text Metadata* table, the *Distribution Legend Metadata* table that describes the soil survey areas exported and the *Distribution Interp Metadata* table that describes the interpretations generated for and included with an export.

The *Distribution Legend Metadata* table has one child table, the *Distribution Mapunit Metadata* table that describes the exported map units. The exported components are described in the *Distribution Component Metadata* table that is a child of the *Distribution Mapunit Metadata* table.



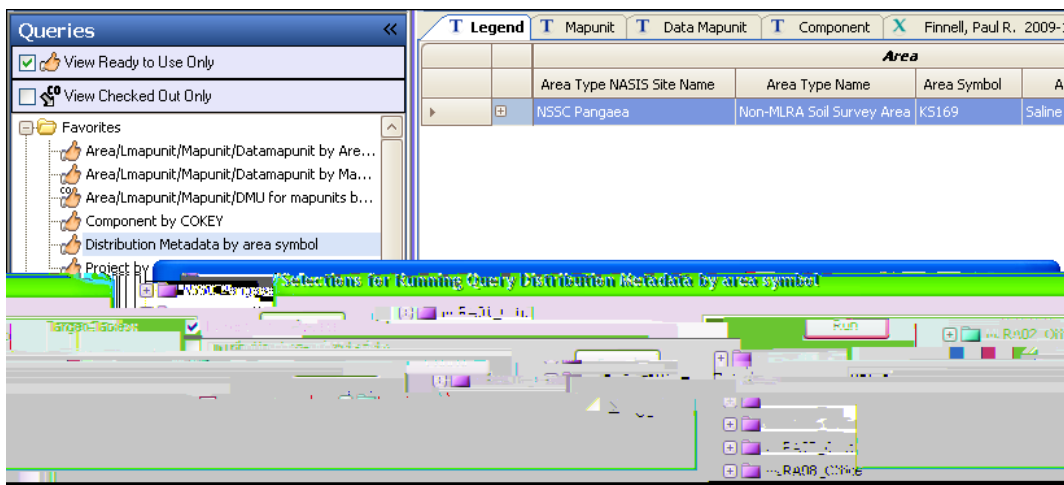
In the course of working on a soil survey, the data can be exported and viewed at different points. The exports created at different points are analogous to “snapshots” of the same view taken on different days, if the same selection criteria are used. The

NASIS User Guide

distribution metadata tables allow for the identification of the selection criteria used for previous exports. By loading the same data and selecting the same criteria as used in a previous export, a new snapshot of the same view can be obtained.

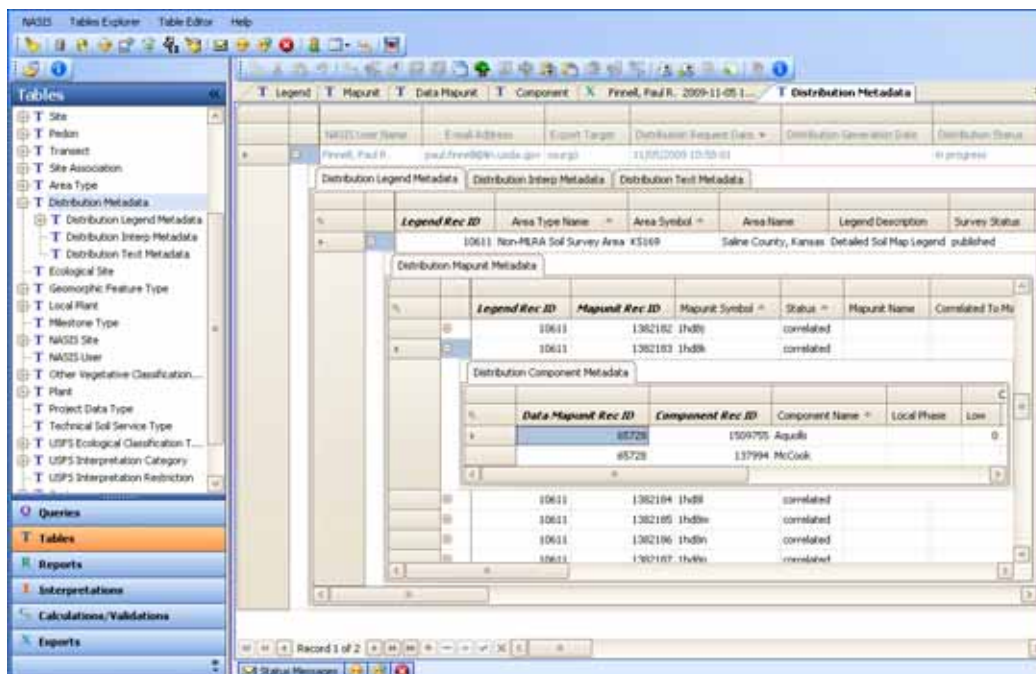
Loading distribution metadata

The export process and data can best be understood by viewing the results of a previous export. From the distribution metadata tables, the selection choices can be seen that were used for export and the type of NASIS data exported. Choose the National Query named “***Distribution Metadata by area symbol***”.



The Distribution Metadata table contains a record for each time that a NASIS format export has been run for the selected legends. The columns indicate whether the selected set or mapunit status was used to select data for export. Blank columns represent status selections not used by the export.

NASIS User Guide



The NASIS export function writes data to these tables as the export progresses. When an export is run in NASIS the Distribution Status, in the *Distribution Metadata* table, may be “in progress”, “successful”, “partially successful”, or “not successful”. Partial success can occur if the user specifies a selected set but one or more entities in the selected set data was not available at the time of the download (for example, if a component or mapunit was deleted).

T Legend		T Mapunit	T Data Mapunit	T Component	X Finnell, Paul R. 2009-11-05 1...	T Distribution Metadata	
		NASIS User Name	E-mail Address	Export Target	Distribution Request Date ▾	Distribution Generation Date	Distribution Status
▶	☐	Finnell, Paul R.	paul.finnell@lin.usda.gov	ssurgo	11/05/2009 10:58:01	11/05/2009 11:04:07	successful

Scroll through the set and consider how this information can be used for successive exports of the same data. The distribution metadata table in the screen indicates that “selected set” was used to select mapunits for export.

Legend	Mapunit	Data Mapunit	Component	Finnell, Paul R. 2009-11-05 1...	Distribution Metadata
	Mapunit Selection Criteria	Mapunit Status Provisional Boolean	Mapunit Status Approved Boolean	Mapunit Status Correlated Boolean	Mapunit Status
	selected set	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

Using selection criteria to choose mapunits, data mapunits and components rather than using the “selected set” makes it easier to create a new export (snapshot) based on the same criteria. When “selected set” is used, the user must check the distribution metadata child tables to identify the mapunits and components exported.

NASIS User Guide

1. Click the **plus sign** to open the child table to view other criteria and identify data selected.

Distribution Legend Metadata							
Distribution Interp Metadata							
Distribution Text Metadata							
		Area Symbol ↑	Area Name	Legend Description	Survey Status	Correlation Date ↑	Legend Certification Status
×	▶	KS169	Saline County, Kansas	Detailed Soil Map Legend	published	06/1989	certified
							current whe

2. Click the **plus sign** to open the **Distribution Mapunit Metadata**.

Distribution Mapunit Metadata						
		Mapunit Symbol ↑	Status ↑	Mapunit Name	Correlated To Mapunit Rec ID	Correlated To Mapunit
×	▶	2177	correlated	McCook silt loam, occasionally flooded		
		2179	correlated	McCook soils, occasionally flooded		
		2266	correlated	Tobin silt loam, occasionally flooded		
		2310	correlated	Bridgeport silt loam, rarely flooded		
		2347	correlated	McCook silt loam, rarely flooded		
		2366	correlated	New Cambria silty clay, rarely flooded		
		2375	correlated	Roxbury silt loam, rarely flooded		

Note: The mapunit selection criteria specify the mapunits for the export.

3. Choose the **Distribution Interp Metadata** tab.

Distribution Legend Metadata					
Distribution Interp Metadata					
Distribution Text Metadata					
	Ru...	Rule Name ↑	Description	Ready to use?	Most Recent Rule Component When Last U...
×	▶	21013	DHS - Catastrophic Mortality, Large Animal Di...	Summary:	03/26/2009 16:37:09
		21014	DHS - Catastrophic Mortality, Large Animal Di...	Summary:	03/26/2009 16:37:09
		20799	DHS - Potential for Radioactive Bioaccumulation	DHS - Hazard of Rad	01/05/2007 09:49:00
		20791	DHS - Potential for Radioactive Sequestration	DHS - Potential for R	09/08/2008 16:11:55
		20309	DHS - Rubble and Debris Disposal, Large-Sca...	Summary:	03/26/2009 16:37:09
		20468	DHS - Site for Composting Facility - Subsurface	Site for Composting f	03/26/2009 16:36:32

Note: Interpretations are generated and the results stored if at least one interpretation is selected. The names of all interpretations used in the export are listed in the *Distribution Interp Metadata* table. Initially, the **Most Recent Rule Component When Last Updated** column is the most recent value for all entities (rules, evaluations, properties) making up the interpretation.

Chapter 18: NASIS Query Writing

This guide is designed to provide the NASIS user an understanding of SQL and its various uses in writing NASIS queries. SQL is used to write queries, reports, properties, calculations and validations. An understanding of the NASIS data structure (tables and columns) is required before using SQL to query or report data.

In addition to this document, the following found on the NASIS web site are references necessary for understanding this process:

- The "Table Structure Report" identifying the NASIS tables and the columns within each table.
- The "NASIS CVIR Language Manual" Scripting language for NASIS Calculations, Validations, Interpretations and Reports.
- Getting Started Chapter on Writing Custom Queries.
- NASIS database schemas.

SQL

To become adept at writing queries, the user must have knowledge of the Structured Query Language database language. SQL, as it is commonly referred to, was created by IBM in the early 1970s as a unified language for defining, querying, modifying and controlling the data in a relational database. There are now over 75 different flavors of SQL in commercial use. NASIS originally used the Informix database and is now using the Microsoft SQL Server database. The basic SQL structure is standardized between commercial databases however there are dialect differences. This document will focus on the SQL Server dialect and how it is used with the various soils databases. SQL is used in NASIS and the Soil Data Mart, the Soil Data Access site and Web Soil Survey. Understanding SQL will allow the user the ability to query data or write reports from these various databases and sites.

SQL Syntax

A SQL statement contains several elements. The SQL has certain "**Keywords**" that have special meaning. They are typically entered in UPPER CASE, however SQL is not case sensitive. This is done for organization purposes only. The statement also contains **identifiers** which are the names of the databases, tables and columns. Typically, identifiers are entirely in lower case. And, the statement contains **operators or functions** are used for comparisons or mathematical equations. The operator can be used for arithmetic (+ or -) or as comparisons (> or =) or as logical (AND, OR, NOT) or aggregate functions (MAX, MIN, SUM, COUNT, AVG).

Keywords

The basic SQL statement consists of 3 key words:

- **SELECT** (column)
- **FROM** (table)
- **WHERE** (condition)

The **SELECT** clause:

- specifies the columns (e.g. musym, muname, mukind) to be retrieved,
- each column must have a unique name,

NASIS User Guide

- allows for expressions that must follow normal SQL syntax (e.g. sandtotal_r + silttotal_r + claytotal_r AS particle_size),
- if expressions are used in the select statement, an alias (e.g. "particle_size") must be used with the expression to provide a unique name.

The **FROM** clause:

- specifies all the tables used in the query,
- and may specify aliases and outer joins.

The **WHERE** clause:

- filters which rows to use in the FROM clause
- uses normal SQL conditions and
- uses the NASIS "JOIN table TO table" syntax to simplify writing join conditions,
- and the two tables in a JOIN condition must have a relationship

Example:

```
SELECT musym, muname  
FROM mapunit  
WHERE muname = 'Harney silt loam, 0 to 1 percent slopes'
```

Identifiers

The NASIS and SSURGO metadata reports, found on the appropriate web sites, contain the identifiers needed for SQL statements. The "Tables_and_Columns.pdf" document provides the list of tables and the columns within each. These documents are designed to provide the user with information necessary to write SQL statements.

Operators or Functions

The arithmetic operators, comparison operators, logical operators and the aggregate functions are used to filter the search functions of the WHERE clause. In this document on page 6 a chart is provided that identifies the data types and the various comparison operators that can be used. Further information on the various operators and functions will be discussed as they are introduced in this document.

NASIS SQL

Queries

Basic Queries

The purpose of a NASIS query is to load the selected set with data that is filtered to meet the needs of the user. The NASIS “query” requires knowledge of SQL and database structure. The NASIS query has two basic parts: the **FROM** clause and the **WHERE** clause. The **SELECT** clause is not used since a NASIS query is designed to return the data for all the columns within the table(s) identified in the FROM clause. Since all queries are understood to pull all columns, the SELECT * (select all columns) is understood and written into the Query editor.

The first step is to identify the data that is to be loaded into the selected set.


Load all instances of a named component

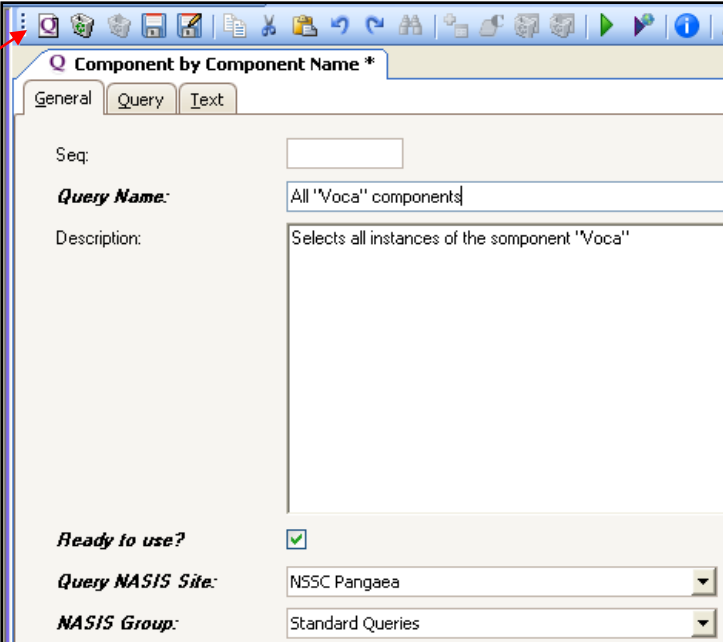
Assuming a simple query, to load all instances of a particular component name, then the next step in writing the query is to review the “Tables and Columns” report:

Table Physical Name: component					
Table Label: Component					
Column Seq	Physical Name	Column Label	Logical Data Type	Physical Data Type	Not Null?
1	dmuidref	Lineage	Integer	Int	Yes
2	seqnum	Seq	Integer	Smallint	No
3	compct_l	Low	Integer	Smallint	No
4	compct_r	RV	Integer	Smallint	No
5	compct_h	High	Integer	Smallint	No
6	compname	Component Name	String	Varchar	No
7	compname_s	S	Integer	Smallint	No
8	localphase	Local Phase	String	Varchar	No

The component name column (Physical Name is “compname”) is found in the Component table and the field is a variable character (Varchar).

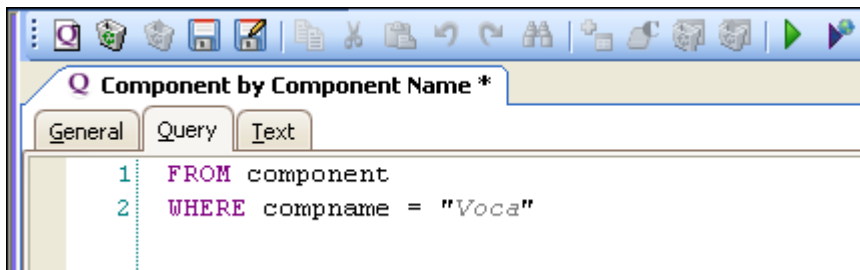
In NASIS, click on the

“Add New Query” icon . The General tab appears. Populate the query name and the description. Both fields are required.



NASIS User Guide

The Query tab is used to write the SQL. The “SELECT *” is understood for all queries, therefore the query begins with the keyword **FROM**.



The above query is an example of a basic query. It includes one table in the FROM clause and one condition in the WHERE clause. This example will return and populate all component data for all instances where the component name is equal to the exact letters “Voca”.

The equal sign “=” is a “comparison operator”. The equal sign is used for an exact match in the field being compared. Any component in which the name is “VOCA” or “voca” or “VoCa” will not be loaded.

This query can be run against the national database in order to populate the local database, or against the local database to populate the selected set.

Load all map units for a given map unit name

Use of the Question mark “?”

The user wishes to design a query to load by map unit name, however there are multiple map unit names the user wishes to use. The user is interested in writing one query that can be used multiple times.

The first step is to identify the Table and Columns:

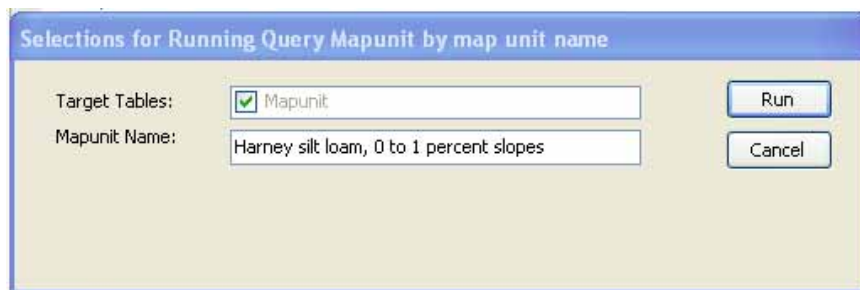
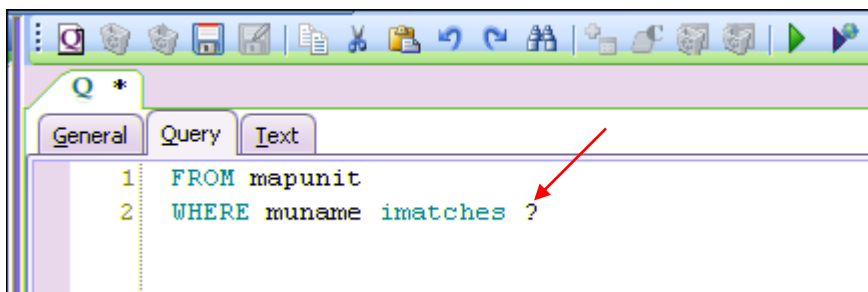
Table Physical Name: mapunit						
Table Label: Mapunit						
Column Seq	Physical Name	Column Label	Logical Data Type	Physical Data Type	Not Null?	Size
1	<u>muname</u>	Mapunit Name	String	Varchar	No	240
2	muname_s	S	Integer	Smallint	No	
3	mukind	Kind	Choice	Smallint	No	
4	mustatus	Status	Choice	Smallint	Yes	
5	nationalmusym	National Mapunit Symbol	String	Varchar	No	6

The map unit name is in the map unit table. The map unit name column is identified with the physical name of “muname”. The “muname” column is a Variable Character.

This query is designed with a variable (the question mark ?) allowing the user to write one query for multiple needs. The **WHERE** clause in this query uses the comparison operator “imatches” (case insensitive) and uses a question mark (?).

The “?” question mark creates a parameter box. The parameter box is used to identify the map unit name to be queried. When run, the query will prompt the user to identify the map unit.

NASIS User Guide



Load all components by name and specific component percentage Use of ">=" comparison operator

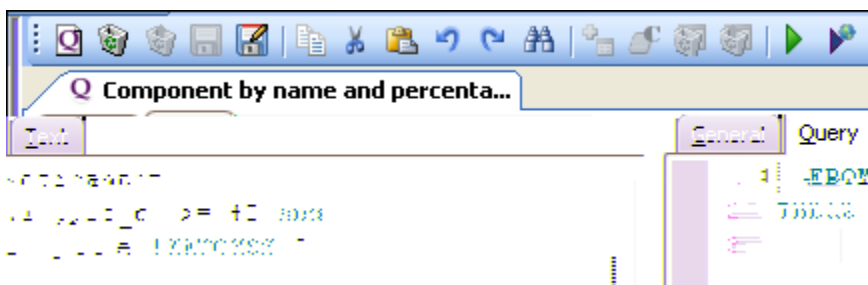
Once again, the first step is to use the Tables and Columns report to identify the columns for use in the query:

Table Physical Name: component
Table Label: Component

Column Seq	Physical Name	Column Label	Logical Data Type	Physical Data Type	Not Null?
1	dmuidref	Lineage	Integer	Int	Yes
2	seqnum	Seq	Integer	Smallint	No
3	compct_l	Low	Integer	Smallint	No
4	compct_r	RV	Integer	Smallint	No
5	compct_h	High	Integer	Smallint	No
6	compname	Component Name	String	Varchar	No
7	compname_s	S	Integer	Smallint	No
8	localphase	Local Phase	String	Varchar	No

Red arrows point to the 'Table Label' and the 'compct_r' (RV) column.

Notice the component percentage has three columns; one for the Low, the RV and the High. The user chooses the RV value since it is most commonly populated.



NASIS User Guide

The comparison operator “greater than or equal to” (\geq) is used to search for those component names in which the component percentage is greater than or equal to 80 percent.

Load all components by name, major component flag and component kind Use of “?” and “(?)” parameter

The first step is to identify the Tables and columns to be used. The component table contains all three search conditions.

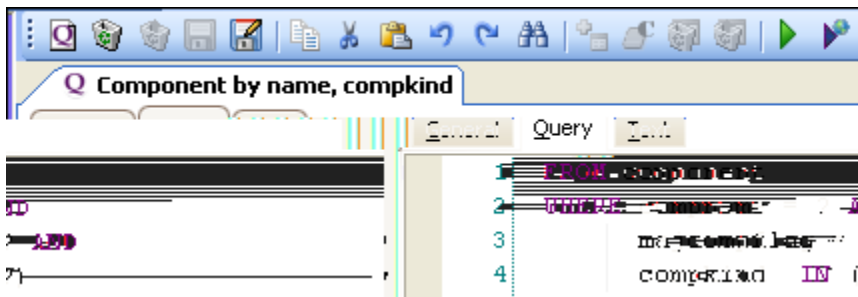
The component name is a “Variable Character”.

The Component Kind is a “Choice” field.

The major component flag is a “Boolean” (or commonly a Yes or No field).

Table Physical Name: component					
Table Label: Component					
Column Seq.	Physical Name	Column Label	Logical Data Type	Physical Data Type	Not Null?
1	bm.idref	Lineage	integer	Int	Yes
2	seqnum	Seq	integer	Smallint	No
3	compordl	Low	integer	Smallint	No
4	compordr	RV	integer	Smallint	No
5	compordh	High	integer	Smallint	No
6	compname	Component Name	String	Varchar	No
7	compname_s	S	integer	Smallint	No
8	compphase	Life Phase	String	Varchar	No
9	compkind	TaxonKind	Choice	Smallint	No
10	majorcompflag	Major Component	Boolean	Bit	No

Opening NASIS and write the query. The “Choice” field for component kind allows the use of a new search condition – the question mark enclosed in parentheses (?). This provides the field choice list as part of the parameter box.



Notice the parameter box now includes the choices for component kind

Selections for Running Query Component by name, compkind

Target Tables: ☒ Component

Component Name: Fayette

Major Component: ☒

Taxon Kind: ☐ family
☐ miscellaneous area
☒ series
☐ taxadjunct
☐ taxon above family
☐ variant

Run Cancel

Load multiple components by name, major component flag Use of "IN ()" parameter

The "IN" command can be used to provide a list of variables to be searched. In this query, the user is loading several component names using a single query. The syntax used is the IN followed by a space, then open parentheses, then open quotation followed by the variable followed by the closed quote. Variables are strung using a comma to separate each variable. The last variable is followed with a closed parenthesis.

Component by Component Name *

General Query Text

```

1 FROM component
2 WHERE compname IN ("harney", "farnum", "albion", "crete") AND
3 majorcompflag = 2
  
```

This query will prompt for "Major Component". If checked, then only major components of the listed soils will be loaded. If left unchecked, all components with these names will be loaded.

Selections for Running Query Component by Component Name

Target Tables: ☒ Component

Major Component: ☐

Run Cancel

NASIS User Guide

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Data types and comparison operators

Understanding data types (integer, character, etc.) is important when writing queries because comparison operators used in query conditions are valid with some data types but not with others. Consequently, when a query is written to specify a condition in the WHERE clause, there must be a comparison operator (such as = or MATCHES) that is compatible with the data element in the query conditions. For example, the data element "area name" is a "Variable Character" data type and the MATCHES operator is valid for this data type. (MATCHES is case sensitive, IMATCHES is case insensitive, = is exact match)

Data Types\	Comparison Operators											
	=	!=	>	<	>=	<=	IS NULL	IS NOT NULL	LIKE " "	MATCHES " " " " IMATCHES " "	BETWEEN AND	IN()
Character												
Variable character (string)												
Text (narrative text)	III	III	III	III	III	III			IV	IV	III	III
Decimal									IV	IV		
Float									IV	IV		
Smallfloat									IV	IV		
Integer									IV	IV		
Smallint									IV	IV		
Money									IV	IV		
Serial									IV	IV		
Date									IV	IV		
Datetime									IV	IV		
Boolean									IV	IV		
Ordered code (choice)									IV	IV		
Unordered code (choice)			II	II	II	II			IV	IV	II	
Evaluation	III	III	III	III	III	III			IV	IV	III	III
Property	III	III	III	III	III	III			IV	IV	III	III
Query	III	III	III	III	III	III			IV	IV	III	III
Rule	III	III	III	III	III	III			IV	IV	III	III

Notes: Date and date time values must be entered in the correct format or an SQL error will result. NOT, AND, and OR operators are used to combine two conditions; they are not related to data type.

Blank Allowed

II Allowed by query program, but results may not be meaningful

III Allowed by query program, but will result in SQL error when query is executed.

IV Not allowed

Exercises

Using the references, write the following queries.

1. Load all map units with a given name with a status of “correlated”.
2. Develop a query that can be used to identify a map unit name with a specific Farmland Class.
3. Load a component based on its drainage class.
4. Load a map unit by name that ranges from 10,000 to 20,000 acres.
5. Load all components that are mollic albaqualfs.

NASIS User Guide

Advanced Queries

In most instances the user will wish to load several tables of data into the local database or selected set. Additional filters (search conditions) may also be necessary to target certain data sets for editing purposes.

Adding additional tables

Loading specific components with specific horizon depths

Review the “Tables and Columns” report to identify the horizon table and its columns.

Table Physical Name: chorizon					
Table Label: Horizon					
Column Seq	Physical Name	Column Label	Logical Data Type	Physical Data Type	Not Null?
1	colidref	Lineage	Integer	Int	Yes
2	seqnum	Seq	Integer	Smallint	No
3	hzname	Designation	String	Varchar	No
9	hzdept_l	Low	Integer	Smallint	No
10	hzdept_r	RV	Integer	Smallint	No
11	hzdept_h	High	Integer	Smallint	No
12	hzdepb_l	Low	Integer	Smallint	No
13	hzdepb_r	RV	Integer	Smallint	No
14	hzdepb_h	High	Integer	Smallint	No

Item 10, “hzdept_r” is the top depth Representative value. This will be used to identify those horizons that fall within the users determined limits.

The screenshot shows the NASIS Query Editor interface. The title bar reads "Component with specific depths". The "Query" tab is selected, displaying the following SQL query:

```
1 FROM chorizon, component
2 WHERE componentname IMATCHES ? AND
3 hzdept_r BETWEEN ? "Top RV depth" AND ? "Bottom RV depth" AND
4 JOIN component TO chorizon
```

Below the query editor is a section titled "Selections for Running Query Component with specific depths". It contains the following fields:

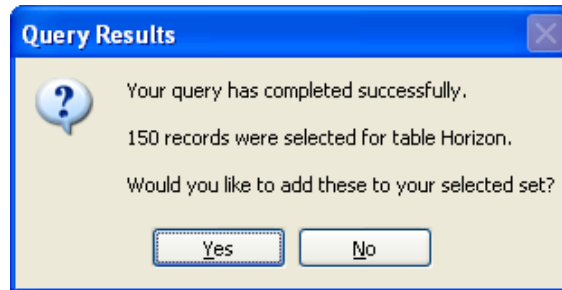
- Target Tables: ☒ Horizon, ☐ Component
- Component Name: Fayette
- Top RV depth: 50
- Bottom RV depth: 100

Buttons for "Run" and "Cancel" are located to the right of the input fields.

The query includes two tables in the FROM clause separated by a comma. The clause “WHERE” includes the search conditions for the component name and uses the previously defined BETWEEN to establish a range of top depths for the search. The query is completed with the JOIN statement joining the two tables, component and chorizon.

NASIS User Guide

The Target Table is set to Horizon because horizon depth is the focus of the query. The user then populates the component name to search and the top and bottom limits of the horizon top depth.



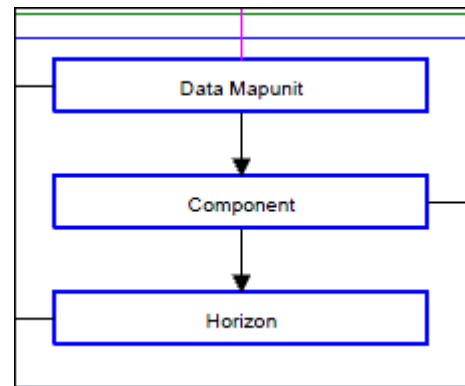
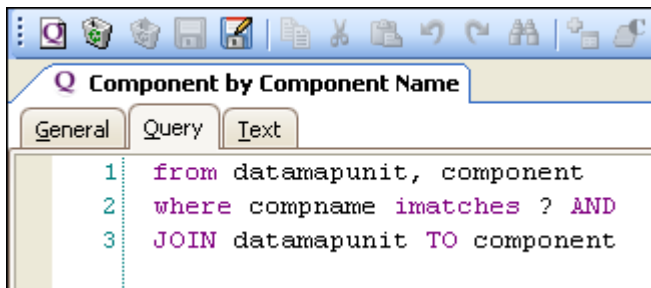
Target Tables

Simply put, the target table focuses the outcome of a particular [query](#). In this way, the user can control the query so that it loads only the specific data to be worked on during that [edit session](#). The target table can greatly restrict or expand the number of records returned by a particular query. To understand target tables, the user must understand the relationship between [objects](#) in the NASIS database. The data model diagrams help to visualize this relationship.

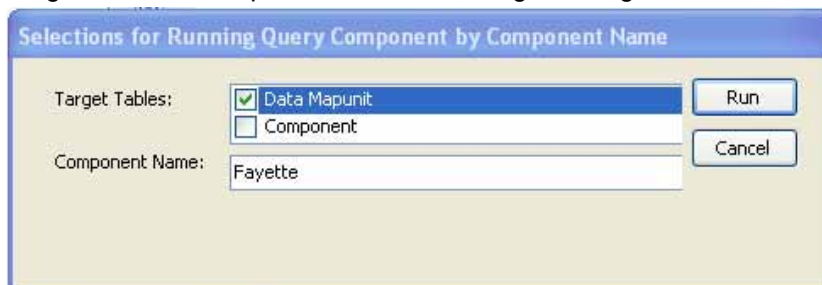
So, how does a Target Table restrict the records returned by a query? In an edit session, the user only wishes to work with components that are named "Farnum". The user would choose a query that loads components by **compname** and specify **Farnum**. Because component name is in the component table, either datamapunit or component could be selected as the target table. *Whether or not only the **Farnum series** is loaded depends on the target table choice.*

- If *datamapunit* is selected as the target table, *all* Data Mapunits that have at least one Farnum component, in addition to *all* the DMU other components, are loaded into the component table.
- If *component* is selected as the target table, only components named Farnum are loaded.

Using this simple query as an example:



The query has two tables in the FROM clause that become Target Tables in the parameter box. Setting the Target Table to "Data Mapunit"



NASIS User Guide

Provides for a selected set in which all Data Mapunits in which the Fayette component is a member.

Data Mapunit								
		DMU Description ↑			HEL (obsolete)		HEL Water (obsolete)	
▶	☐	MLRA 105 Fayette SIL 9 to 14 slopes						
		<div>Component</div> <div>Data Mapunit Certification History</div> <div>Data Mapunit Crop Yield</div> <div>Data Mapunit Text</div>						
		Comp %						
Q		Low	RV ↓	High	Component Name ↑	Local Phase	Taxon Kind	Major Component
▶	⊕		75		Fayette C	moderately eroded	series	<input checked="" type="checkbox"/>
	⊕		10		Fayette C	severely eroded	series	<input type="checkbox"/>
	⊕		5		Dubuque C	moderately eroded	series	<input type="checkbox"/>
	⊕		5		Village C	moderately eroded	series	<input type="checkbox"/>
	⊕		3		Downs C	moderately eroded	series	<input type="checkbox"/>
	⊕		1		unnamed soils M		family	<input type="checkbox"/>
<								

Contrast the previous results with setting the Target Table to Component.

Selections for Running Query Component by Component Name

Target Tables:

☐ Data Mapunit
 ☒ Component

Component Name:

Fayette

Run

Cancel

By using Component as the Target Table, the component table is populated with only the “Fayette” component.

Data Mapunit									
		DMU Description ↑				HEL (obsolete)		HEL Water (obsolete)	
	☐	MLRA 105 Fayette SIL 9 to 14 slopes							
		Component Data Mapunit Certification History Data Mapunit Crop Yield Data Mapunit Text							
		Comp %							
🔍		Low	RV ↓	High	Component Name ↑	Local Phase	Taxon Kind	Major Component	
▶	⊕		75		Fayette C	moderately eroded	series	<input checked="" type="checkbox"/>	
	⊕		10		Fayette C	severely eroded	series	<input type="checkbox"/>	
<									

Contrast the results of the same query with different Target Tables.

Setting the Target Table to Data Mapunit requested all Data Mapunits in which Fayette is a component. What is a Data Mapunit? It is all the components and their data for a given map unit.

Setting the Target Table to Component requested to populate the Component table with only the Fayette components. The Component table contains only a specific component, therefore if used

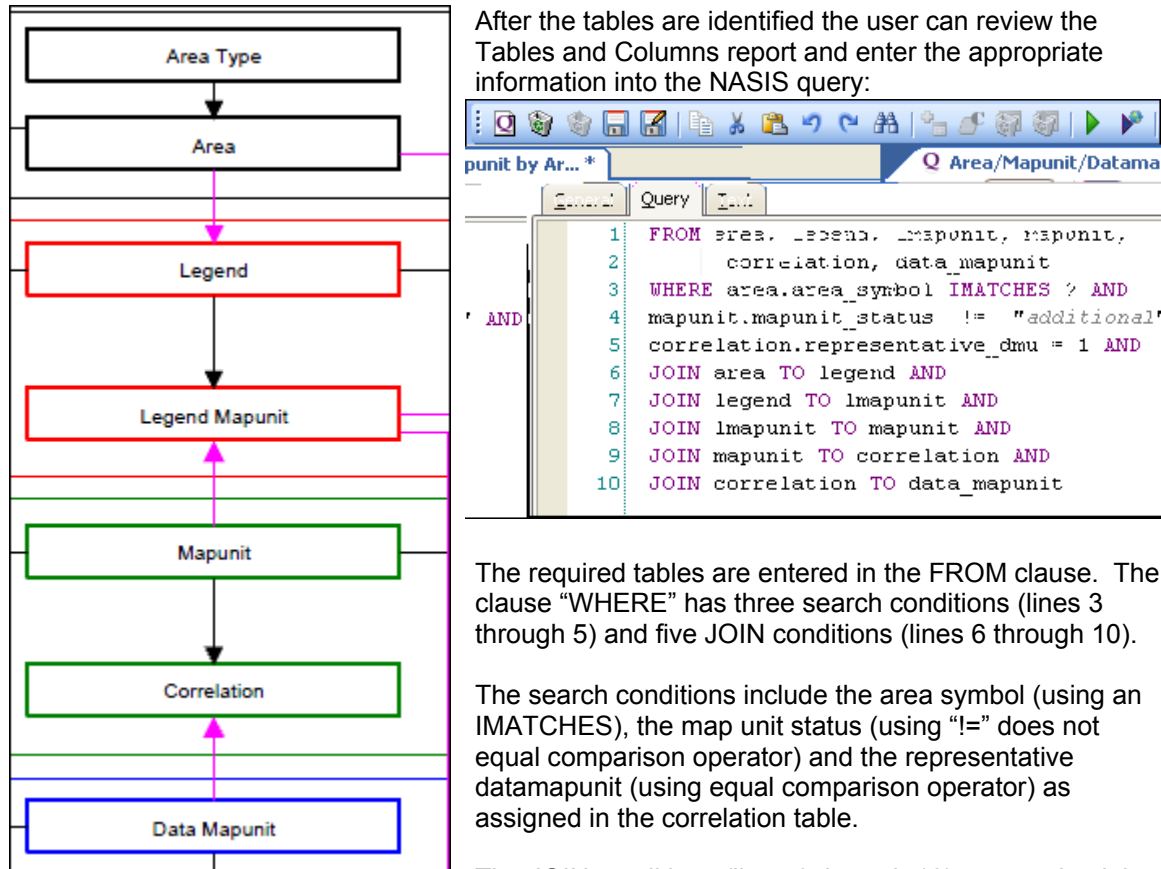
NASIS User Guide

as the Target Table then only the specific named component is populated within the Data Mapunit for the selected set.

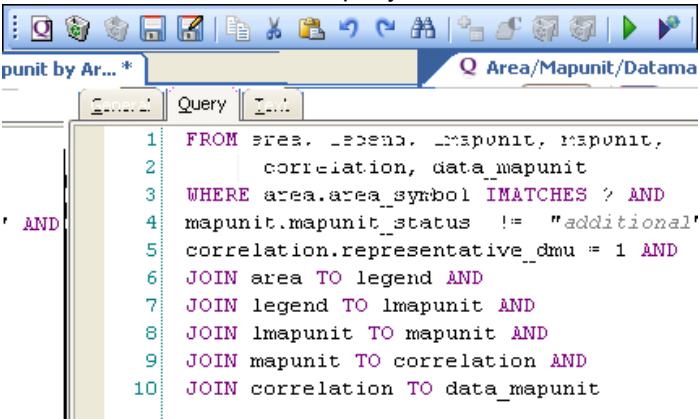
Advanced Queries (continued)

In this example the user will load all map units and the associated data mapunit for a given Survey Area. The manuscript reports require the Area, Legend, Mapunit, and Datamapunit objects to be loaded. This query will require multiple tables and additional search conditions.

Using the database schema, the user identifies the tables needed for this query:



After the tables are identified the user can review the Tables and Columns report and enter the appropriate information into the NASIS query:



The required tables are entered in the FROM clause. The clause "WHERE" has three search conditions (lines 3 through 5) and five JOIN conditions (lines 6 through 10).

The search conditions include the area symbol (using an IMATCHES), the map unit status (using "!=" does not equal comparison operator) and the representative datamapunit (using equal comparison operator) as assigned in the correlation table.

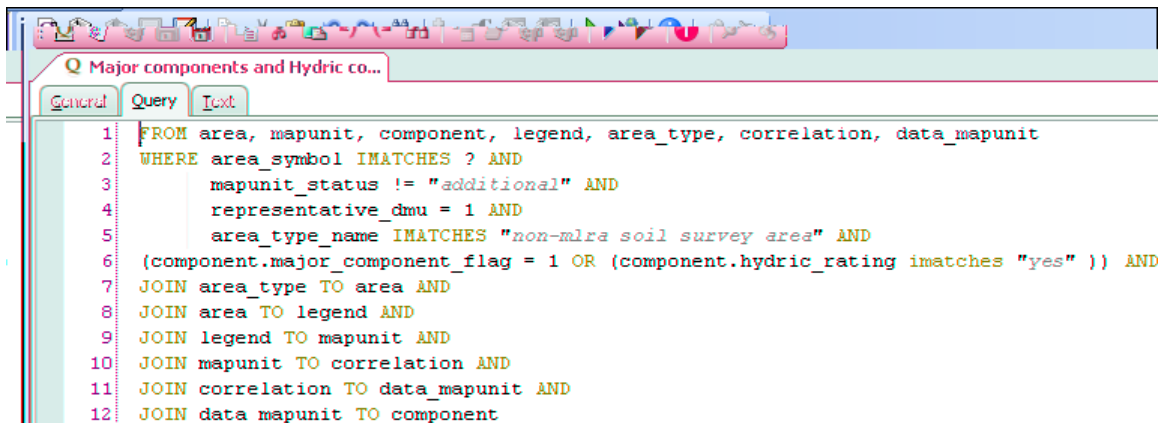
The JOIN conditions (lines 6 through 10) are used to join the various tables as assigned in the schema. The JOIN condition syntax is written "JOIN {table} TO {table} AND". The logical operator "AND" is used to join all tables within the JOIN clause.

This query prompts for the Target Tables and Area Symbol.

The screenshot shows the "Selections for Running Query Area/Mapunit/Datamapunit by Area ID" dialog box. It contains a "Target Tables:" section with a list of tables and checkboxes: Area, Legend, Legend Mapunit, Mapunit, Correlation, and Data Mapunit. The "Area Symbol:" field is empty. There are "Run" and "Cancel" buttons.

NASIS User Guide

Use of the OR command: Load all major components and all hydric components



```
1 FROM area, mapunit, component, legend, area_type, correlation, data_mapunit
2 WHERE area_symbol IMATCHES ? AND
3     mapunit_status != "additional" AND
4     representative_dmu = 1 AND
5     area_type_name IMATCHES "non-mlra soil survey area" AND
6     (component.major_component_flag = 1 OR (component.hydric_rating imatches "yes" )) AND
7 JOIN area_type TO area AND
8 JOIN area TO legend AND
9 JOIN legend TO mapunit AND
10 JOIN mapunit TO correlation AND
11 JOIN correlation TO data_mapunit AND
12 JOIN data_mapunit TO component
```

Explanation

This is a multi-table query that prompts the user to enter a Survey Symbol.

Line 1: Include all the tables from Area to Component. Notice the list of tables is not in logical order, but in the order to assign Target Tables. The Area, Mapunit and Component are the Target Tables. This query is used to load components, therefore the component table is required since the major component flag and the hydric rating are in the component table and therefore this table is required as a Target Table.

Line 2: The question mark "?" creates a parameter box. The IMATCHES allows the user to enter data insensitive to case; the match will be made on the letters not the case.

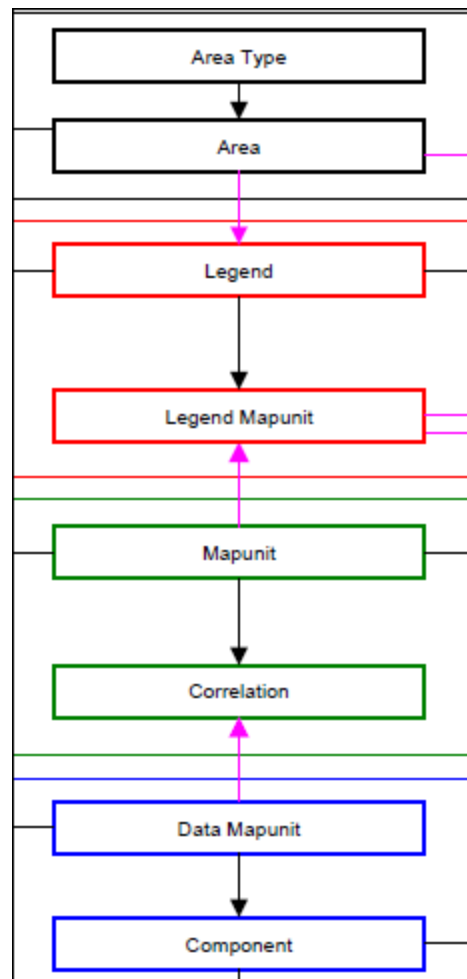
Line 3: If "Mapunit" is chosen as the Target Table, then this query will not load map units with the status labeled as "additional".

Line 4: If there are multiple records in the correlation table, then only the one record identified as the representative DMU is loaded.

Line 5: Only the legends with the Area Type "Non-MLRA Soil Survey Area" will be loaded.

Use of the OR command:

Line 6: Notice there are two search conditions within a set of parentheses. The two search conditions are compared using the "OR" command. This search condition states "load all the major components OR load all the components in which the hydric rating matches "Yes". By using the OR command in this search condition, the computer will load all the major components and any hydric components whether the hydric component is a major or minor component.



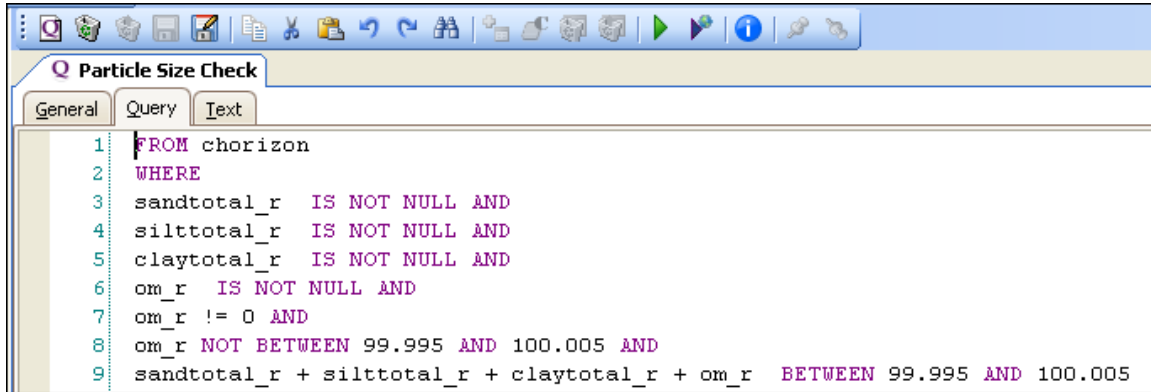
NASIS User Guide

Lines 7 – 12: The JOIN conditions joining all the tables in the logical sequence found on the database schema.

Arithmetic Operators

Load horizons in which Sand, Silt and Clay totals do not equal 100

After checking the Tables and Columns report, the sand, silt and clay columns are entered into the query.



Line 1: selects the horizon table. The physical name is "chorizon".

Line 2: begins the WHERE clause

Lines 3-5: verify that the sand, silt and clay fields for this query can not be NULL fields.

Lines 6-8: checks that the representative value for OM can not be NULL or Zero and must not be 100.

Line 9: adds the sand, silt, clay and OM RVs to verify they are between the two values.

If these conditions are met, then the query will load those horizons that meet these search criteria. Notice, there are no prompts for a parameter box. This query will load all horizons in the national database that meet these conditions.

Exercise:

How can this query be tailored to limit the size of the returned rows?

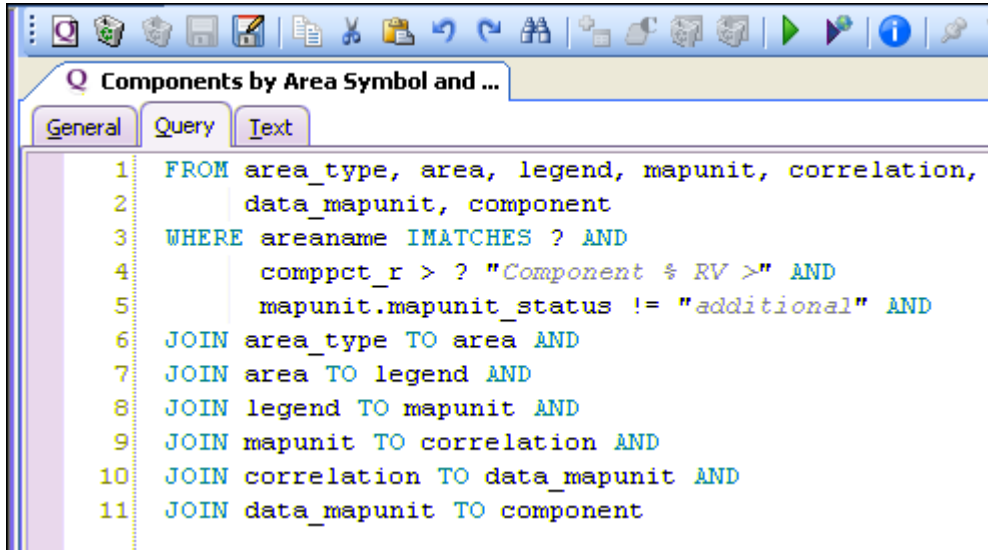
NASIS User Guide

Outer Joins

Load all Components for a survey area based on component percent

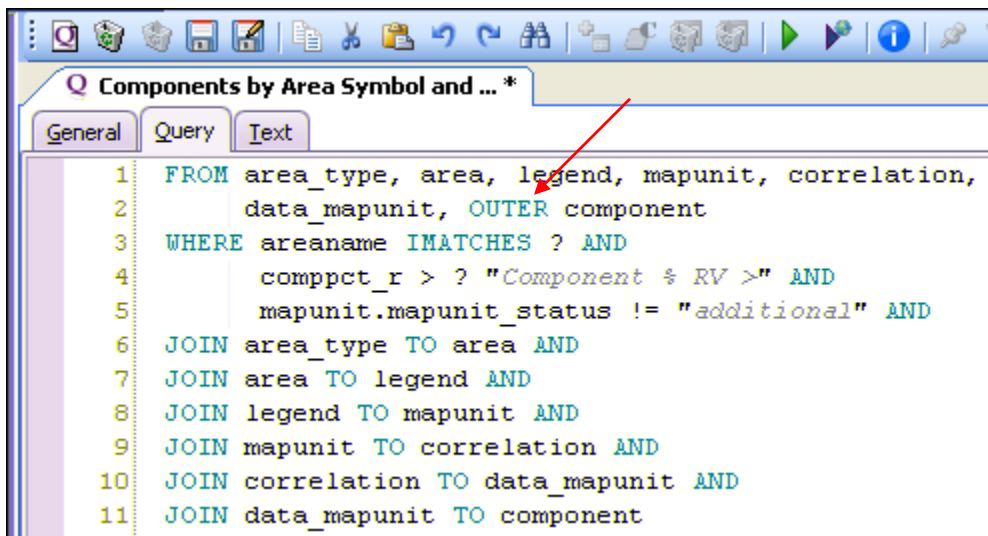
This following query was used to explain Target Tables. It will be used again to explain OUTER Joins.

When using multiple tables, the query assumes a one to one relationship between the two tables. There is a row in the parent table (Data Mapunit) that is linked directly to the child table (Component). If a data mapunit has an empty component table then the 1 to 1 match fails and that data mapunit does not meet the criteria.



```
1 FROM area_type, area, legend, mapunit, correlation,
2     data_mapunit, component
3 WHERE areaname IMATCHES ? AND
4     compct_r > ? "Component % RV >" AND
5     mapunit.mapunit_status != "additional" AND
6 JOIN area_type TO area AND
7 JOIN area TO legend AND
8 JOIN legend TO mapunit AND
9 JOIN mapunit TO correlation AND
10 JOIN correlation TO data_mapunit AND
11 JOIN data_mapunit TO component
```

So, what if a Data Mapunit has a Component table in which no data exists? Should that information be loaded as part of the selected set? Most times the answer is Yes. This is overcome by the use of the OUTER join.



```
1 FROM area_type, area, legend, mapunit, correlation,
2     data_mapunit, OUTER component
3 WHERE areaname IMATCHES ? AND
4     compct_r > ? "Component % RV >" AND
5     mapunit.mapunit_status != "additional" AND
6 JOIN area_type TO area AND
7 JOIN area TO legend AND
8 JOIN legend TO mapunit AND
9 JOIN mapunit TO correlation AND
10 JOIN correlation TO data_mapunit AND
11 JOIN data_mapunit TO component
```

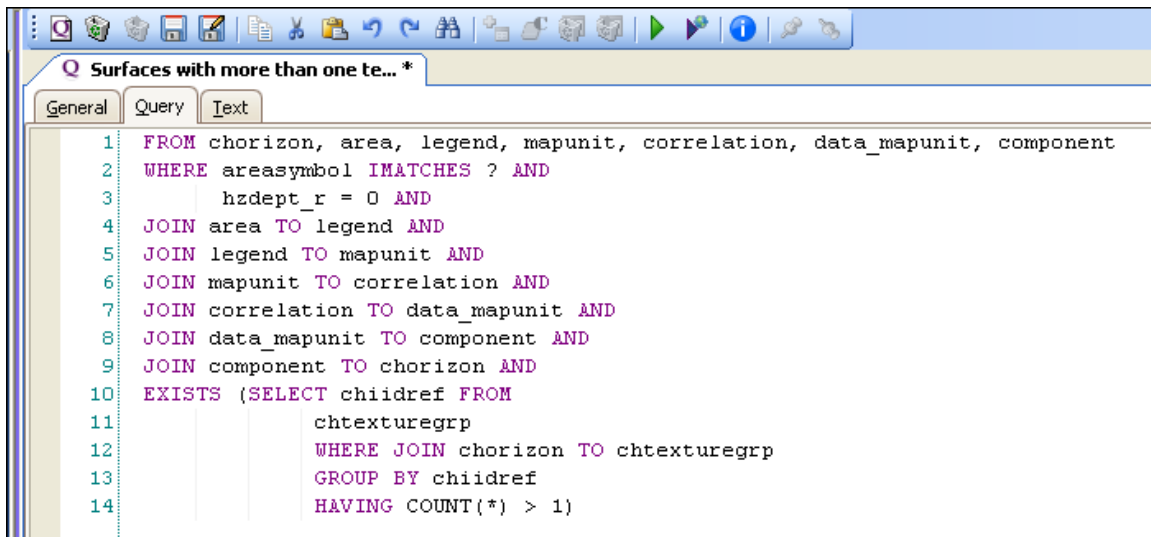
With the query modified, it will now load all Data Mapunits associated with the map unit even if there is nothing populated in the Component table. The OUTER join stipulates that all data mapunits are to be loaded whether or not there is data in the component table.

Subqueries

A subquery is used to further restrict the results of the main query. A subquery is set within the query using parentheses.

EXISTS

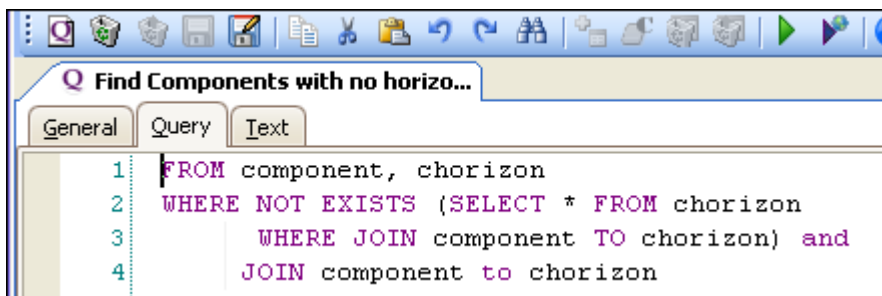
The EXISTS operator is testing for existence of data, therefore only one column or the asterisk (*) is necessary in the SELECT statement. What if a query is written to load all components that have more than one texture in the surface horizon? In this example, the query is written to prompts for a survey area and to select the surface horizon. The subquery begins with EXISTS and tests the existence of more than one record ID (chiidref) in the horizon texture group table for the surface layer. Notice the use of the chorizon table which links the subquery to the query.



```
1 FROM chorizon, area, legend, mapunit, correlation, data_mapunit, component
2 WHERE areasymbol IMATCHES ? AND
3     hzdept_r = 0 AND
4 JOIN area TO legend AND
5 JOIN legend TO mapunit AND
6 JOIN mapunit TO correlation AND
7 JOIN correlation TO data_mapunit AND
8 JOIN data_mapunit TO component AND
9 JOIN component TO chorizon AND
10 EXISTS (SELECT chiidref FROM
11         ctexturegrp
12         WHERE JOIN chorizon TO ctexturegrp
13         GROUP BY chiidref
14         HAVING COUNT(*) > 1)
```

NOT EXISTS

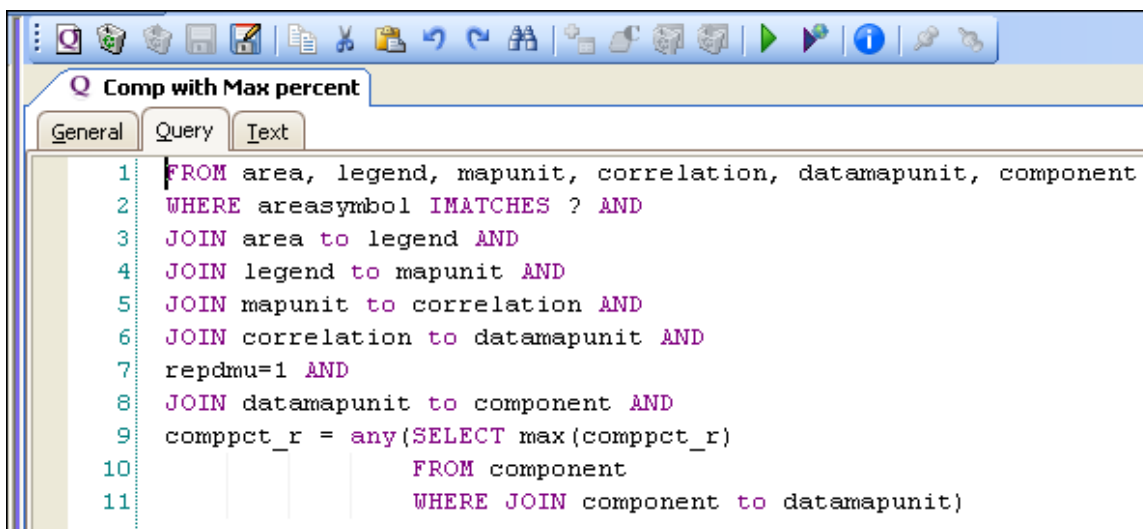
Contrary to EXISTS, the NOT EXISTS is identifying the non existence of data. What if it was necessary to identify those components in which no horizon information is entered? The outer join is helpful, however another method is available. Using a subquery can be helpful to identify a child table with no open rows. In this example the NOT EXISTS is used. The subquery is in parentheses and it states to select everything for the horizon table and joins the component and the horizon table. The NOT EXISTS is a negative or reversal. If nothing exists, a table with no data, then it returns a TRUE statement and that data is loaded into the selected set.



ANY operator

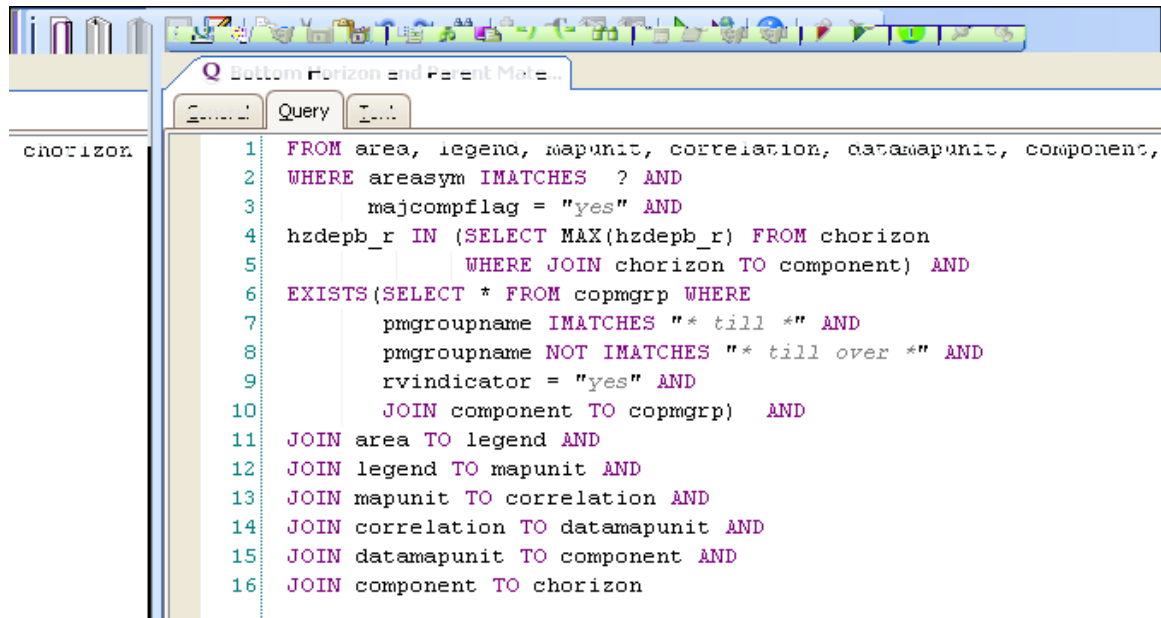
What if it was necessary to identify the component with the maximum percentage in data mapunit?

One method is through a subquery using the ANY operator. Notice the query prompts for the area symbol, includes all the tables to component and has all the joins. In addition, a subquery is set apart using parentheses. The subquery will find the max component percentage and set that value to compct_r. In doing so, the query will load the component that contains that maximum percentage.



IN operator

The IN operator requires that the subquery returns one value. In this example the IN operator is identifying the maximum bottom depth of the soil – the use of the term MAX on the horizon bottom depth column. In addition, this query contains a second subquery to identify those soils in which the parent material is till or “till over”. This is an example of using multiple subqueries to load data.



Chapter 19: Introducing Interpretations

This chapter is designed to provide an understanding of some of the basic concepts underlying NASIS interpretations: interpretive statements, fuzzy logic (or approximate reasoning), and converting fuzzy logic results to rating classes. These concepts are essential for using NASIS to generate interpretations (Chapter 20) and create interpretive criteria (Chapter 21).

Developing Interpretive Statements

The first step in developing interpretive criteria is to articulate an interpretive statement. An interpretive statement is simple explanation of the land use, the limiting features, and the relationship among the limiting features (the interactions or the lack of interactions among the features). This approach to developing interpretations is a method to prepare for thinking in terms of fuzzy logic.

Consider a simple example of evaluating a site for the construction of a picnic area.

It might be determined that “***a site has limitations for picnic areas if it is too wet or too steep***” (limitation). On the contrary, it might be determined that “***a site has no limitations for picnic areas if it is not too wet or too steep***” (suitability). The perspective from which the interpretive statement is articulated, either negative (limitation) or positive (suitability), depends on the interpretation preference. Regardless of the perspective chosen, the statement must contain the three elements:

1. land use,
2. limiting features (soil features affecting land use), and
3. relationship between the limiting features (or logical connection).

For this lesson, the following example will assume the negative perspective:

A soil has limitations for picnic areas if it is too wet or too steep.

Exploring the meaning of Limiting Features in the context of a Land Use

After articulating the interpretive statement, the definition of “too steep” and “too wet” in the context of picnic areas must be determined. As an expert , or more preferable, a

The meaning of “too steep”

What property would be evaluated in determining whether a soil is too steep for a picnic area? *Slope* is the most likely property to evaluate.

The next step is to consider the class limits for slope. Based on requirements for a picnic area, it could contain a wood or a concrete table with a bench and a fire pit. It might be concluded that a slope less than 8 percent would be a Not Limited, Somewhat Limited would be 8-15 percent, and Very Limited would be any slope greater than 15 percent. These values will be entered into Table 19-2.

The meaning of “too wet”

Determining a property for “too steep” was fairly straightforward. However, *wetness* can be measured in a variety ways: depth to wet layer, available water capacity (AWC), texture, or soil moisture in surface layer. Each property might be valid given the land use of picnic areas. Therefore, what is meant by picnic areas and their expected use must be further defined. Will the picnic area be paved or gravel, seeded to turf grasses or in a forest cover? What months of the year will it be used? And so on.

Any of the properties mentioned could be used. For this demonstration, *minimum depth to soil zone of saturation* will be used. Given expert knowledge on the land use and requirements, it is determined that depth to saturation greater than or equal to 100cm is Not Limited; Somewhat Limited is between 20-99 cm; and Very Limited is less than 20 cm to saturation. These values are entered into the template, as shown here in Table 19-2.

Limitations for Picnic Areas				
Property	Not Limited	Somewhat Limited	Very Limited	restrictive feature
Slope(%)	< 8%	8 – 15%	> 15%	too steep
Depth to saturation (cm)	> 100	20 – 99	< 20	too wet

Table 19-2. Table of Limiting Features for Picnic Areas

Table 19-2 is similar to the historical rating guides used for interpreting soils prior to NASIS. The rating classes of Not limited (slight), Somewhat Limited (moderate), and Very Limited (severe) are referred to as “crisp” limits or defined class breaks.

The Limitation of Using “Crisp Limits”

The main limitation in the use of rating classes, or “crisp limits”, is that they do not always indicate a fine enough distinction of gradation. For example, referring to Table 19-2 above, crisp rating classes define both 8% and 15% slope as having “Somewhat Limited” limitations for picnic areas. Consider the 15% slope categorized as Somewhat Limited whereas 16% is considered Very Limited. Therefore, a wide variation of slopes between 8 and 15 percent get the same rating, however slopes that are nearly the same,

15 and 16 percent, get different ratings. Given this limitation of defined classes, the fuzzy logic approach is used to rate affecting features using numerical values instead of rating classes.

Introducing Fuzzy Logic

What if the evaluation of a property was continuous? What if the degree of limitation increased continuously as slope increased or as the soil saturation rose closer to the surface? The use of fuzzy logic makes this possible. The fact that something is true does not exclude the possibility that it is also false. Fuzzy logic is built upon the precept of approximate reasoning. With fuzzy logic, a complete gradation of the truth (or false) of the interpretive statement can be represented.

Fuzzy logic provides a translation of the ranges of properties into a uniform basis. The uniform basis is a value from 0 to 1 where 1 means a statement is absolutely true and 0 means a statement is absolutely not true. For example,

The slope percentage for picnic areas is rated as:

- < 8 Not limited
- 8-15 Somewhat limited
- > 15 Very limited

The minimum depth to water table is rated as:

- > 100 Not limited
- 20-99 Somewhat limited
- < 20 Very limited

With fuzzy logic, a value in the middle or anywhere along a continuum can be identified. The easiest method to see this continuum is to set up a graph. Notice that in Figures 19-1 and 19-2, the values for slope and minimum depth to water table are translated into some measure of truthfulness about the statement of being too wet or too steep. (In this simple example, a sigmoid curve will be used.)

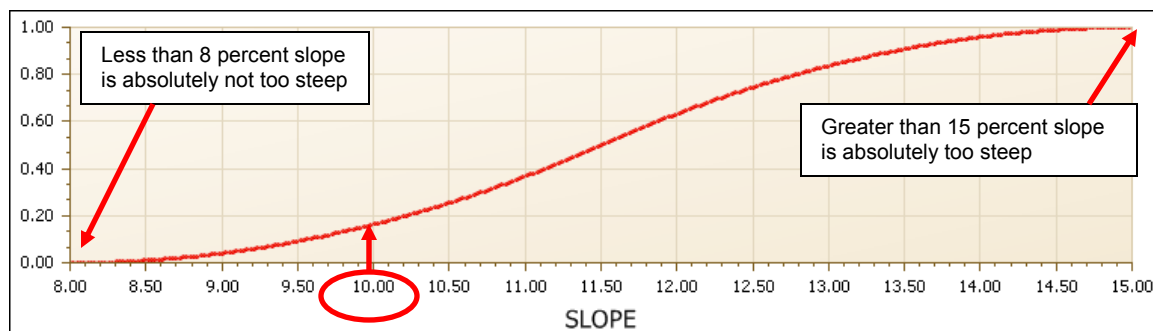


Figure 19-1. Percent Slope Along a Continuum

With fuzzy logic, a value in the middle can be shown. It is partly true that 10% slope is too steep. It's also partly not true.

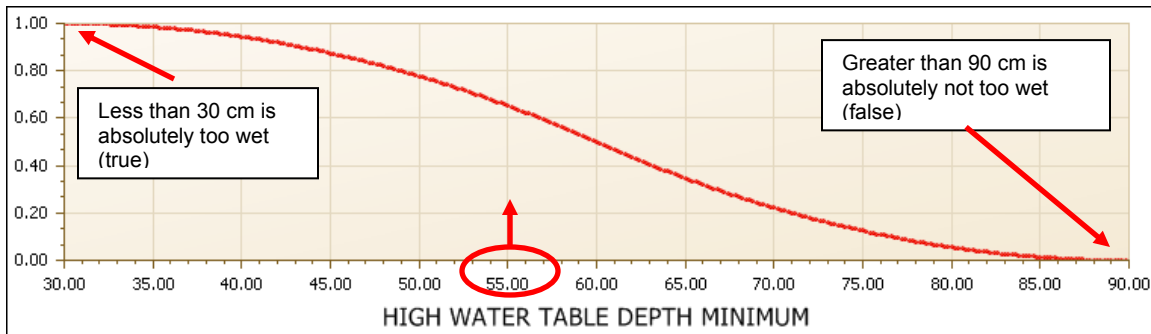


Figure 19-2. Minimum Depth to Water Table Along a Continuum

With fuzzy logic, a value in the middle can be shown. It is partly true that a 55 cm depth is too wet. It's also partly not true.

Compare the graphs in Figures 19-1 and 19-2 to Table 19-2. The difference is, instead of crisp limits, there are now gradational limits. To understand the improvement in the interpretive criteria, there must be an understanding in fuzzy math concepts.

Although in this demonstration the numerical values for too steep and too wet seem arbitrarily determined, the values would actually be based on know data or opinions of experts creating the interpretation. When the numerical values for “too steep” and “too wet” are determined, the possibilities of dealing with interactions and relative weights become real.

Understanding fuzzy math concepts

Applying fuzzy math allows soil interpretations to handle interactions. For example, interpretations using the interaction of slope and soil saturation, where, as slope increases, water decreases can be evaluated. Fuzzy logic allows the use of relative weights, such as providing slope to have more importance to the interpretation than the depth to saturation.

Consider the conventional method of thinking. As stated previously, the fact that something is true does not exclude the possibility that it is also false, although the conventional bias is to believe that true excludes false. In the conventional way of thinking, a condition of A OR B is TRUE under the first three conditions in Table 19-3 below. The condition of A OR B is FALSE under the last condition:

if A is true	OR	if B is true	THEN	the condition is true
T		T		T
T		F		T
F		T		T
F		F		F

Table 19-3. Conventional Math Concepts

NASIS User Guide

In order to use Fuzzy math, there must be an understanding of the logic that it uses.

Fuzzy Math
A **OR** B \approx **Max** [A, B]
A **AND** B \approx **Min** [A, B]

Figure 19-3. Fuzzy Math Rules for OR and AND Operators

OR Operator

Table 19-4 shows a truth table for the Boolean **OR** operator. Using fuzzy math, the *true* values are equal to 1 and the *false* values are equal to 0. By inserting the fuzzy values of 0 to 1 and then applying the fuzzy math rule of **A OR B \approx Max [A, B]**, the conditions are expressed for the OR statement.

The table demonstrates with true=1 and false=0 that **OR** is equivalent to **Max**.

if A is true	OR	if B is true	THEN	the condition is true
T (1)		T (1)		T (1)
T (1)		F (0)		T (1)
F (0)		T (1)		T (1)
F (0)		F (0)		F (0)

Table 19-4. Fuzzy Math Using OR Operator

AND Operator

Table 19-5 below shows a truth table for the Boolean **AND** operator. Using fuzzy math, the *true* values are equal to 1 and the *false* values are equal to 0. By inserting the fuzzy values of 0 to 1 and then applying the fuzzy math rule of **A AND B \approx Min [A, B]**, the conditions are expressed for the AND statement.

This table demonstrates with true=1 and false=0 that **AND** is equivalent to **Min**.

if A is true	AND	if B is true	THEN	the condition is true
T (1)		T (1)		T (1)
T (1)		F (0)		F (0)
F (0)		T (1)		F (0)
F (0)		F (0)		F (0)

Table 19-5. Fuzzy Math Using AND Operator

This demonstration of fuzzy math is not meant as a proof but simply as a demonstration of how the math works. Returning to the picnic area example, insert into the equation the fuzzy values shown in the following graphs: Figures 19-4 and 19-5.

NASIS User Guide

A – If slope is 11.85 percent, then the fuzzy value is 0.60

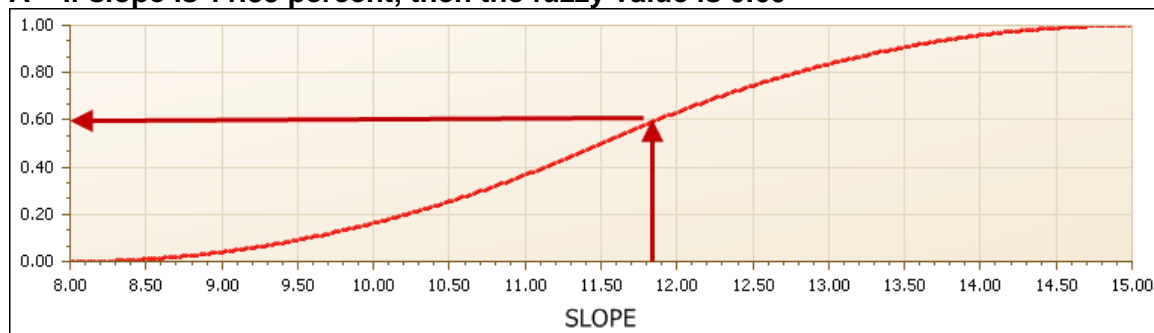


Figure 19-4. Fuzzy Logic Applied to Percent Slope

B – If the soil is saturated at 63 cm, then the fuzzy value is 0.40

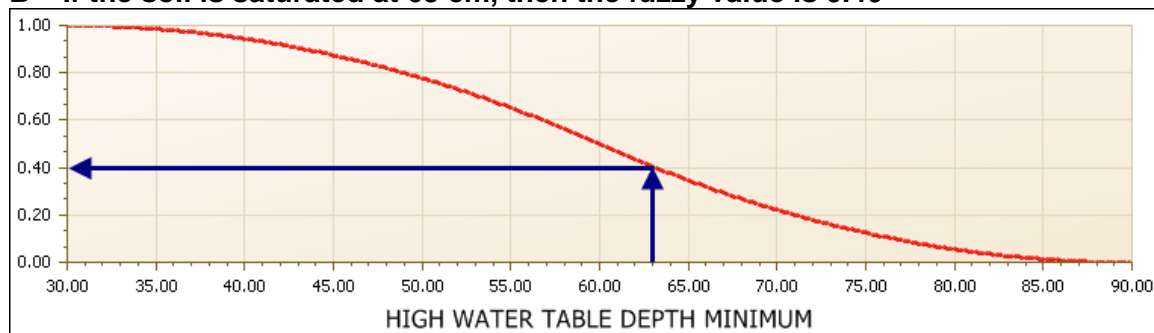


Figure 19-5. Fuzzy Logic Applied to Minimum Depth to Soil Saturation

Remember the interpretive statement and apply the fuzzy values from the graphs above, refer to Figure 19-6 below for a picture of how it fits together.

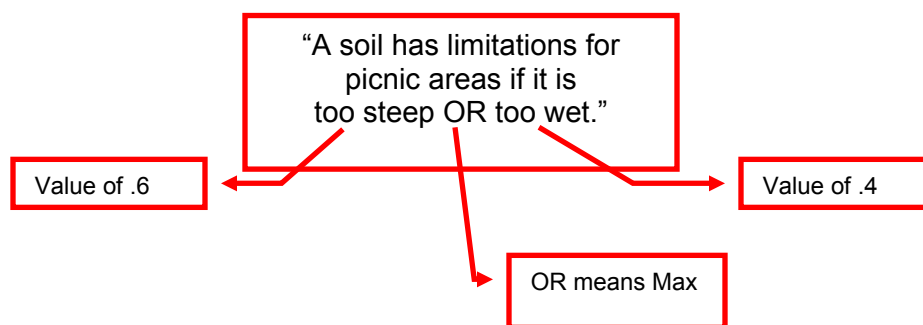


Figure 19-6. Interpretive Statement with Fuzzy Values for Picnic Areas

Finally, compute the interpretive result given the OR operator:

A	OR	B	Then (max)
T.6		T.4	T.6

A site has limitations for picnic areas if the site is 0.6 too steep or the soil is 0.4 too wet. The statement has an OR condition so the fuzzy rule of $A \text{ OR } B \sim \text{Max} [A, B]$ was applied to produce the maximum value of 0.6. With fuzzy logic, there is a 0.6 truthfulness that the site has limitations for picnic areas and that the primary limitation is related to slope.

NASIS User Guide

What is the result if the statement of limitations was constructed: “A site has limitations for picnic areas if it is too wet *AND* too steep?” Using the math for AND statements the result would be a 0.4 truthfulness that the site has limitations for picnic areas.

A	AND	B	Then
T.6		T.4	T.4

Is it good or bad that there is a 0.4 truthfulness that the site has limitations for picnic areas and that the limitation relates to the interaction of slope and wetness? Furthermore, what does the numerical value mean? How does the numeric value relate to the interpretive statement for picnic areas?

These questions depend on the opinion and judgment of an expert or team of experts. Fuzzy logic provides the ability to handle interactions and relative weights to interpret a soil interpretation, but expert opinion and judgments are necessary when assigning meaning to the fuzzy numbers. The decision on the values meaning in the context of the land use is decided by the experts.

Converting the Fuzzy Result to Rating Classes (Defuzzifying)

NASIS provides the option of assigning conventional rating classes as well as rating values (fuzzy values). Any number of rating values between 0 and 1 can be created and assigned rating classes. Expert opinions and judgments are the basis of the adjectives used and the values assigned to the rating classes.

It is possible to convert the fuzzy values to rating classes. Using the ongoing example of picnic areas where the overall rating of truthfulness is 0.6 (using the OR statement), Table 19-6 shows a set of conclusions that could be made about the interpretive results.

Rating Classes	
Not limiting	0.4
Somewhat limiting	0.6
Limiting	0.75
Very limiting	0.99
Extremely limiting	1.0

Table 19-6. Rating Classes for Picnic Area

Understanding how to read the fuzzy result in terms of rating classes is important yet may not be apparent. When entering rating classes, enter the maximum rating value associated with each range. In Table 19-7,

- a value greater than 0 and less than .4 is not limiting;
- a value greater than .4 and less than .6 is somewhat limiting;
- a value greater than .6 and less than .9 is limiting;
- a value greater than .9 and less than 1 is very limiting; and
- a value equal to 1 is extremely limiting.

Lesson Summary

In this lesson, an interpretive statement for picnic areas was written, fuzzy math was applied to the statement to get a fuzzy result, and the fuzzy result was converted to rating classes. This is the general procedure to build interpretive criteria.

Chapter 21 demonstrates how to use the NASIS Rule and Evaluation editors, to build interpretive criteria. It is best to become familiar with the Reporting Interpretations before proceeding. The Report Manager will be used for printing interpretations in Chapter 20.

Chapter 20: Reporting Interpretations

Chapter 20 introduces custom interpretation reports. NASIS allows reports of interpretations based on current data and on calculations automatically performed by NASIS. This provides the capability of applying new interpretive criteria to soil data.

Interpretive criteria in NASIS are based on the concept of fuzzy logic (also known as approximate reasoning). This fundamental concept is explained and demonstrated in detail in Chapter 19, an important foundation for this lesson in Chapter 20. This chapter will discuss the special report parameters for custom interpretations and learn how to run the soils data through a set of existing criteria.

Understanding the Interpretation Reports

This lesson uses the same selected set built in Chapter 13. The data in the selected set are the basis of reports, not the permanent database. Refer to pages 13.1-3 to reload the data.

1. Choose the **Reports Explorer**. This is the same report manager used for printing other NASIS reports.

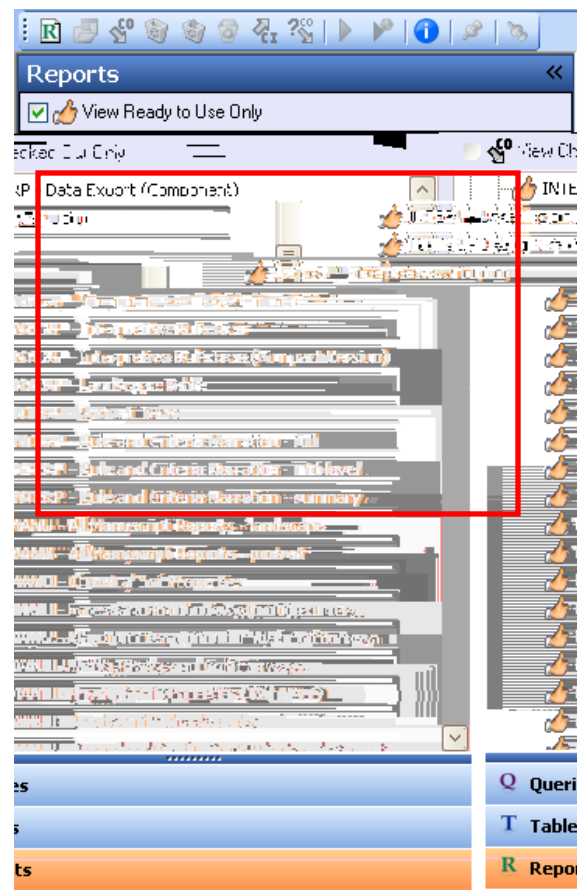
2. On the Report Explorer, choose **NSSC Pangaea**.

Note: There are several interpretation report formats available. They are indicated on the Report Explorer Panel by the INTERP prefix.

3. Double click each interpretation report to open into the Editor panel. Then read its' description.

4. The reports are grouped with each group having a specific purpose. The first two reports provide unformatted results based on either the component or the map unit. The Debug report is used when writing interpretations. The Grouping report displays the interpretation results based on the rating class. The Interpretative Rule reports provide the elements of each interpretation. The Landscape and Portrait are formatted reports providing the interpretation ratings and restrictions. And the “Rule and Criteria” reports provide the metadata in a variety of formats.

Note: The Report Explorer dialog displayed contains several reports unique to interpretations. The INTERP and MANU reports are able to print interpretation results. Become familiar with the reports by opening the reports and reading the descriptions.



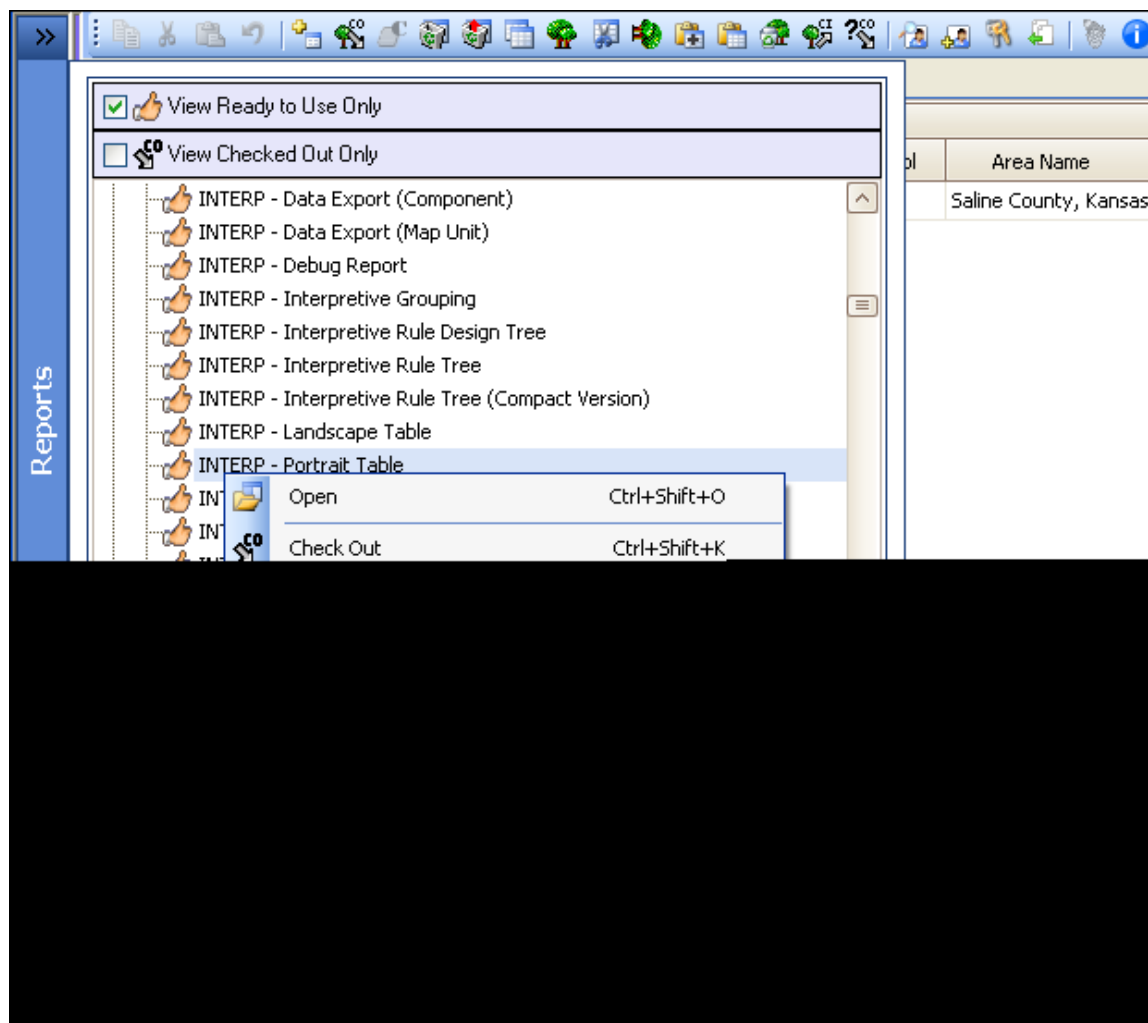


Figure 20-1 Using the right click short cut menu to run reports

Note: NASIS provides pre-defined interpretation criteria within some reports. Selecting NSSC Pangaea on the Report Explorer displays the “national” interpretation reports. This set of “national” interpretation reports reflect the soil rating criteria documented in various national handbooks and manuals (National Soil Survey Manual, National Forestry Manual, National Range and Pasture Handbook, etc.).

The ultimate responsibility of interpretive certification lies with the States, therefore these “national” interpretations should be regarded as “templates” which the states may decide to use as is or modify to reflect local criteria. When selecting “national” interpretations make certain the “Ready to use” box is marked. Some “national” interpretations stored in the system may be currently under development. These incomplete or un-tested interpretations should not be used to produce interpretations except for internal testing purposes.

A naming convention identifies interpretations, which appear at the beginning of the list in the NASIS Report Parameters dialog. As shown in Table 20.2 below, interpretations are named with a 3-letter code for the technical discipline, followed by the interpretation

NASIS User Guide

name. Table 20-2 shows a sample of the interpretations owned by the NSSC Pangaea site.

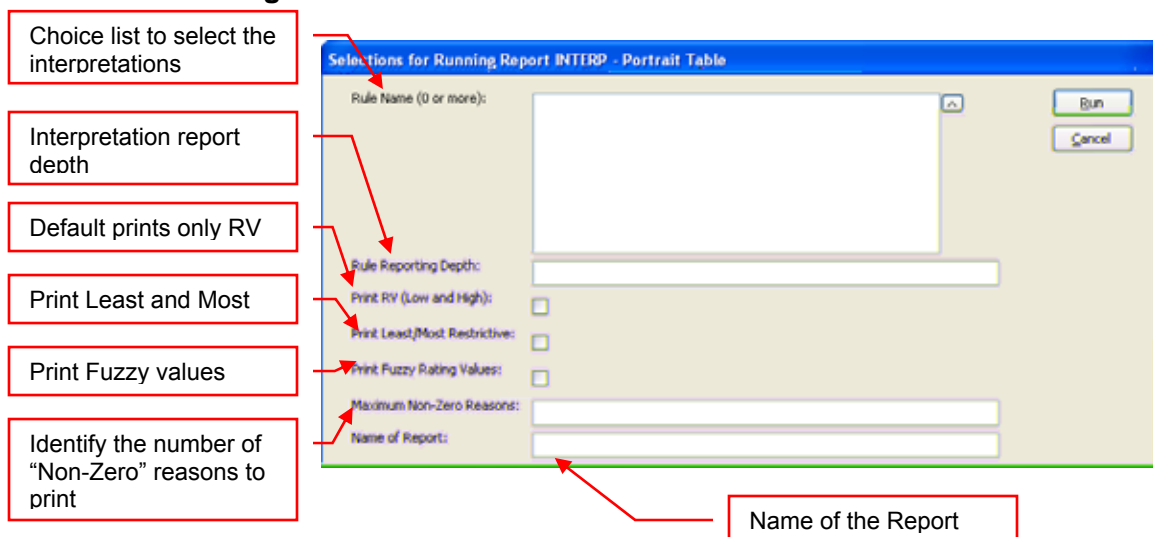
3-Letter Code	Interpretation
ENG	Septic Tank Absorption Fields
ENG	Sewage Lagoons
ENG	Sanitary Landfill (Trench)
AWM	Land Application of Ag Wastes
AWM	Land Application of Municipal Sewage Sludge
AWM	Irrigation Disposal of Wastewater
FOR	Potential Erosion Hazard (Road/Trail)
FOR	Potential Erosion Hazard (Off-Road/Off-Trail)
FOR	Soil Rutting Hazard

Table 20-2. Naming Convention for Interpretations

Examining Reporting Options

There are several different options on the Report Parameters dialog for previewing reports. The type of reports and the selections will be reviewed.

1. On the Report Explorer panel, select the NSSC Pangaea folder and the **Interpretation (portrait)** report name. Refer to Figure 20-1.
2. Click **Run Against local Database**.



--

NASIS User Guide

4. Complete the Interpretation Parameter box as shown below.

Selections for Running Report INTERP - Portrait Table

Rule Name (0 or more): NSSC Pangaea:ENG - Septic Tank Absorption Fields ^ a Run Cancel

Rule Reporting Depth: 2 b

Print RV (Low and High): ☒ c

Print Least/Most Restrictive: ☐ d

Print Fuzzy Rating Values: ☒ e

Maximum Non-Zero Reasons: 5 f

Name of Report: Septic Tank Absorption Fields (Reporting Depth = 2) g

5. The parameters assigned in this specific report are:
- The interpretation ENG – Septic Tank Absorption Field
 - The interpretation rule depth is set to 2 levels of Rule reporting. This is the number of rules and sub rules that will be reported:
 - Interpretation (Rating),
 - Sub rule (Reason),
 - Sub rule (Reason)
 - Print only the RV results, not the Low, RV and High.
 - Do not print the Least and Most Restrictive interpretation results
 - Print the Interpretation Restriction Fuzzy Value (0 through 1).
 - Print a maximum of 5 interpretive reasons (restrictions)
 - Print a name on the report.
6. Generate the report by clicking the **Run** button.

Note: The actual processing of this report is using the local computer. This may take a couple of minutes.

7. The Report Viewer appears, displaying the report.

NASIS User Guide

The screenshot shows a Notepad window titled "INTERP - Portrait Table.txt - Notepad" with a menu bar (File, Edit, Format, View, Help) and a date stamp "10/29/2009". The report content is titled "Septic Tank Absorption Fields Re Saline County, Kansas: Detailed Soil".

Callouts identify the following features:

- Component:** Points to the "Report" and "Map Legend" labels on the left side of the report.
- Mapunit:** Points to the "Map symbol and soil name" column header.
- Level 1: Overall rating for interpretation (parent rule):** Points to the "ENG - Septic Tank Absorption Fields" column header.
- Level 2: Ratings for sub rules:** Points to the numerical ratings (e.g., 1.000, 0.500) in the data rows.
- Rating Values:** Points to the descriptive text (e.g., "Somewhat limited +", "Flooding", "Ponding") in the data rows.
- Rating classes (defuzzified adjective ratings):** Points to the same descriptive text as the previous callout.
- Asterisk indicates the result is based on null values in the database:** Points to an asterisk (*) next to the rating "1.000 Depth to saturated zone" for the "Solomon" mapunit.
- Plus "+" sign indicates default values were used:** Points to a plus sign (+) at the end of the rating "1.000 Somewhat limited +".

8. Use the scroll bars on the Report Viewer to scroll through the report.
9. Refer to the callouts to identify the significant features of this report.
10. Refer below for an illustration of the various levels or depths.

Map symbol and soil name	ENG - Septic Tank Absorption Fields
5505: Kisiwa, occasionally flooded-----	1.000 Very limited 1.000 Flooding 1.000 Ponding 1.000 Depth to saturated zone 1.000 Slow water movement 1.000 Seepage, bottom layer 1.000 Not aridic environment

Callouts for the table above:

- Reporting Depth 0:** Points to the overall rating "1.000 Very limited".
- Reporting Depth 1:** Points to the rating "1.000 Depth to saturated zone".
- Reporting Depth 2:** Points to the rating "1.000 Seepage, bottom layer".

Note: On the report parameters, a reporting depth of 2 was used.

NASIS User Guide

Note: Because sub rules can be aggregated into other rules as well as into an interpretation, NASIS provides the capability of reporting up to ten Rule Depths.

Note: A *sub rule* is a logical statement about one limiting feature. A sub rule says nothing about the land use; therefore, the same sub rule can be used in building different interpretations. Sub rules are aggregated into an interpretation and are considered the basis, or building blocks, of an interpretation. Sub rules have at least one evaluation linked to them.

For additional discussion of interpretive criteria, see Chapter 19.

11. The report can be printed using the menu File, Print options.
12. When finished looking at this report, return to the Reports Explorer and run the same report, again. The second run will select a different set of options on the Report Parameters dialog.
13. Click **Run Against Local Database** to redisplay the Report Parameters dialog.

Selections for Running Report INTERP - Portrait Table

Rule Name (0 or more): NSSC Pangaea:ENG - Septic Tank Absorption Fields

Run Cancel

Rule Reporting Depth: 0

Print RV (Low and High): ☒

Print Least/Most Restrictive: ☒

Print Fuzzy Rating Values: ☒

Maximum Non-Zero Reasons: 0

Name of Report: Septic Tank Absorption Field Reporting Depth = 0 and 0 Reasons

14. In the Report Parameters,
 - a. change **Reporting Depth** to **0**,
 - b. select **Print RV (Low and High)**,
 - c. select **Print Fuzzy Rating Values**, and
 - d. change **Maximum Non-Zero Reasons** to **0**.
15. Click the **Run** button and examine this report.

NASIS User Guide

16. **Note:** Level one reporting depth and 0 “Non-Zero” reasons returns only the interpretation rating.

Septic Tank Absorption Field Reporting Depth = 0 and 0 Reasons		
Las Animas County Area, Colorado, Parts of Huerfano and Las Animas Counties: Detailed Soil Map Legend		
Map symbol and soil name	ENG - Septic Tank Absorption Fields	
A1A:		
Trementina, cool	1.000	Very limited
Capulin-----	0.500 (0.000-1.000)	Somewhat limited (Not limited to Very limited) +
Mauricanyon-----	0.500 (0.400-1.000)	Somewhat limited (Somewhat limited to Very limited) +
A1W:		
Furia-----	1.000	Very limited +
Bandarito-----	1.000	Very limited +
Collegiate-----	1.000	Very limited +
Molinaro-----	0.500 (0.000-1.000)	Somewhat limited (Not limited to Very limited) +
AA:		
Ayon-----	0.760 (0.010-1.000)	Somewhat limited (Somewhat limited to Very limited) +

Result of choosing
“Print Least/Most Restrictive”

17. When finished reviewing the report, close the Notepad and return to NASIS

NASIS User Guide

18. Rerun the report, this time, change the **Reporting Depth** to **2**, select **Print RV**, **Print Least/Most Restrictive**, **Print Fuzzy Rating Values** and the **Maximum Non-Zero Reasons** to **10**.

Selections for Running Report INTERP - Portrait Table

Rule Name (0 or more):

Rule Reporting Depth:

Print RV (Low and High): ☒

Print Least/Most Restrictive: ☒

Print Fuzzy Rating Values: ☒

Maximum Non-Zero Reasons:

Name of Report:

19. Click the **Run** button to generate the report.

[illegible]

Note: Realize that although the request is for a maximum of 10 reasons, it is for the “Non-Zero” reasons. The report will only print those reasons with a fuzzy value greater than 0, up to a maximum of 10.

Examining Report Writing

Creating a report to display interpretations contains code that will run the Interpretation and feeds the results into the report for formatting. The manuscript reports are commonly written to include specific interpretations, specific parameters and specific formatting. The Calculations/Validations/Interpretations/Reports (CVIR) document provides greater details on this information. The objective here is to identify the sections of the report and the purpose of each section.

First section – Identify the “Base table” or the table that must be within each SQLs.

BASE TABLE component.

Second section – Run the interpretations and gather the results. This section is designed to set the Rule Depth (RULEDEPTH), set the Maximum non-zero Reasons (REASONS), set the crosstab if more than one interpretation is used (CROSSTAB), identify the values for each crosstab (VALUES), identify the column labels (LABELS), and identify the data to be entered into each column (CELLS).

```
INTERPRET "NSSC Pangaea": "ENG - Septic Tank Absorption Fields",  
          "NSSC Pangaea": "ENG - Sewage Lagoons"  
MAX RULEDEPTH 1  
MAX REASONS 5  
AGGREGATE CROSSTAB BY PrimaryRuleInterpRuleName  
VALUES ("ENG - Septic Tank Absorption Fields", "ENG - Sewage Lagoons")  
LABELS "Septic Tanks", "Sewage Lagoons"  
CELLS RatingValueHighRV, InterpRuleDepth, RatingClassNameHighRV.
```

Third section – create the structured query language to retrieve the necessary data to build the report.

```
EXEC SQL select areaname, legenddesc, liid, musym, Imapunitiid, Imapunit.seqnum,  
               compname, component.seqnum, comppct_r, coiid, localphase  
FROM real area, legend, Imapunit, mapunit, correlation, datamapunit, component  
WHERE join area to legend and  
      join legend to Imapunit and  
      join Imapunit to mapunit and  
      join mapunit to correlation and  
      join correlation to datamapunit and repdmu=1 and  
      join datamapunit to component;  
SORT BY liid, Imapunit.seqnum, musym SYM, component.seqnum, comppct_r DESC,  
        compname, coiid.
```

Fourth section – is used to format the results of the report.

Specific terminology is used in interpretation reports. The terminology of “PrimaryRuleInterpRuleName”, “RatingValueHighRV”, “InterpRuleDepth”, “RatingClassNameHighRV” along with many others are explained in the CVIR manual in greater detail.

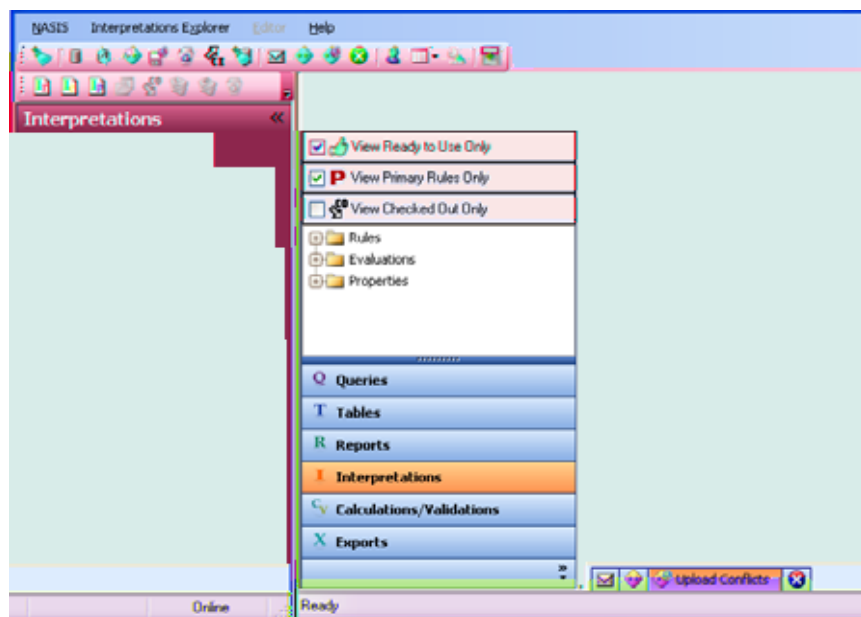
Chapter 21: Developing Interpretation Criteria

Chapter 19 provided the basic concepts underlying NASIS interpretations: interpretive statements, fuzzy logic (or approximate reasoning), and converting fuzzy logic results to rating classes. Chapter 20 introduced the running of interpretation reports and selecting existing interpretive criteria to run against the selected set data. Chapter 21 demonstrates how to create new criteria. It introduces the NASIS Interpretation Generator and the editors used for building interpretations. With these tools, new interpretations can be created based on documented criteria and current NASIS data. Once the interpretation is created, calculations are automatically performed by NASIS providing the capability of applying new interpretive criteria to soil data. All interpretation data is stored in the local database and available in the Interpretations Explorer. It is essential that Chapters 19, 20 and 21 be read before attempting to develop interpretations. Prior to developing interpretive criteria, there must be an understanding of articulating interpretive statements, fuzzy logic, and converting fuzzy numbers into rating classes.

The NASIS interpretation module is designed for interdisciplinary experts who thoroughly understand the process of developing interpretive criteria. Users must understand the relationships of soil properties to the system or application being evaluated. Expert opinion is required throughout the process of creating interpretive criteria with NASIS. Use of this chapter requires that the user have basic NASIS training on the subjects of navigation, database structure, and object ownership.

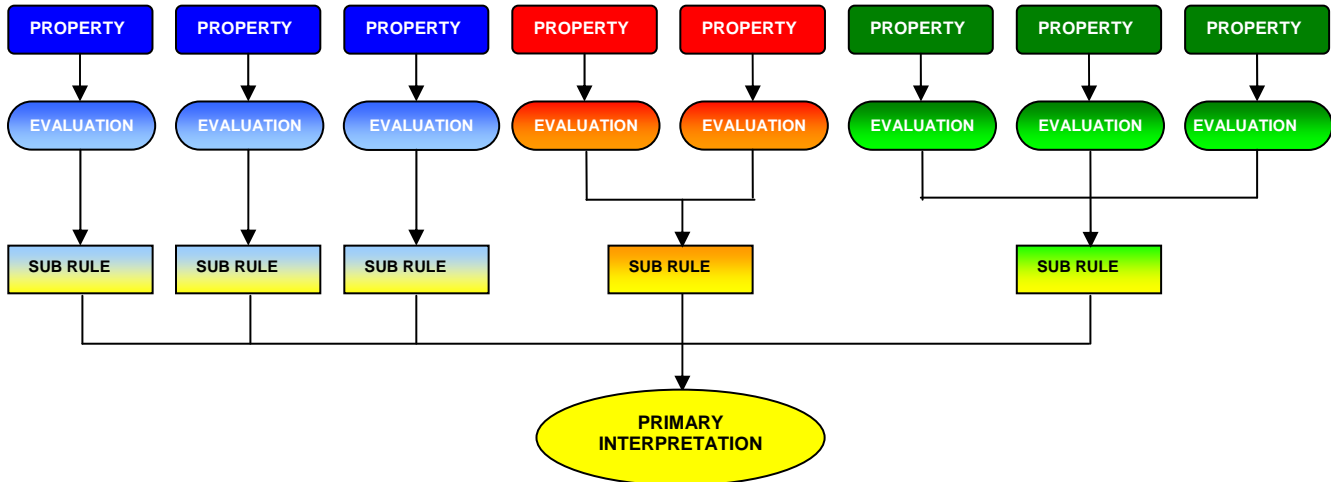
Overview of Interpretation Criteria

In NASIS, interpretive results are generated by applying interpretive criteria to soil data. Interpretive criteria are divided into four parts: **Interpretations**, **Sub Rules**, **Evaluations**, and **Properties**. These parts are located in the Interpretations Explorer panel.



Three Component Concept of an Interpretation

In NASIS, interpretive results are generated by applying interpretive criteria to soil data. Interpretive criteria are divided into three basic parts: *properties*, *evaluations*, and *rules* (includes *interpretation* and *sub rules*).



A property is a specification used to extract soil property data from the database. This can be anything from a simple query statement to a complex calculation based on several queries.

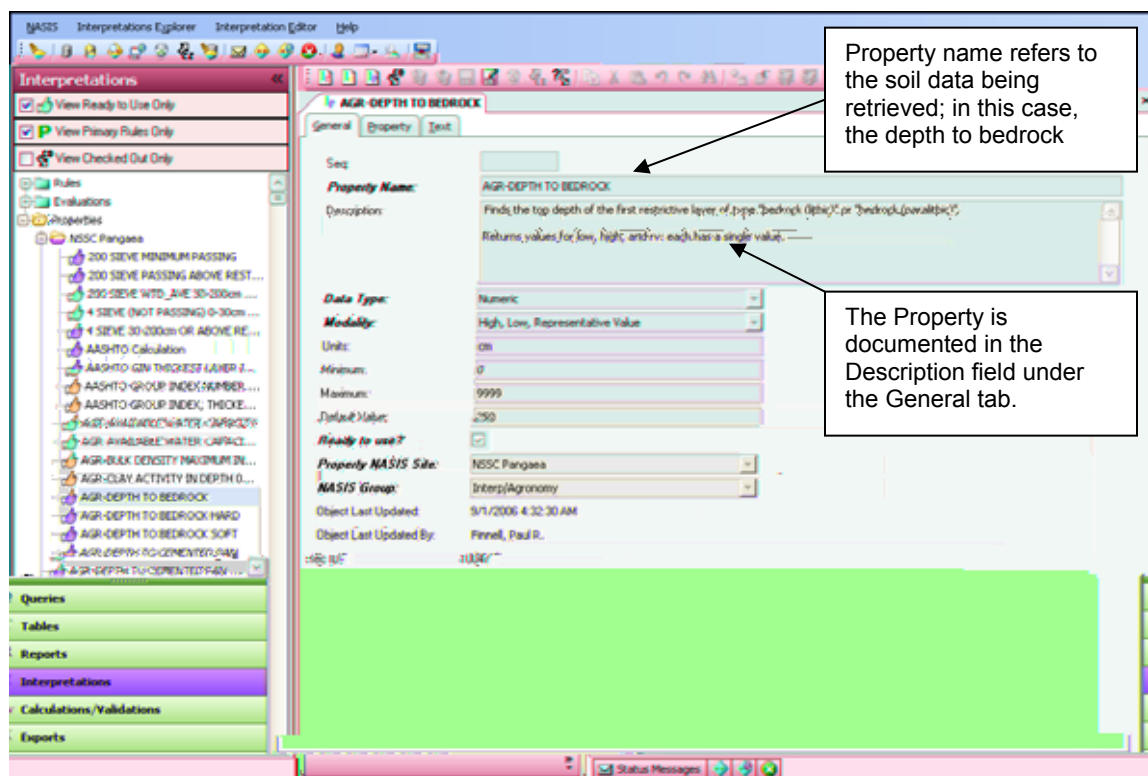
An evaluation is some test that will be applied to the data returned from a property to determine the truth of some proposition. Evaluations can be either fuzzy (returning any value between 0 and 1) or crisp (returning only 0 or 1).

Rules are used to combine the results of evaluations and/or other rules to create new propositions. A sub rule provides the results from at least one evaluation or other sub rule. An interpretation is the top level rule that combines the results of all sub rules associated with the specific interpretation.

At the top level, a report can invoke one or more rules and format the resulting values for output.

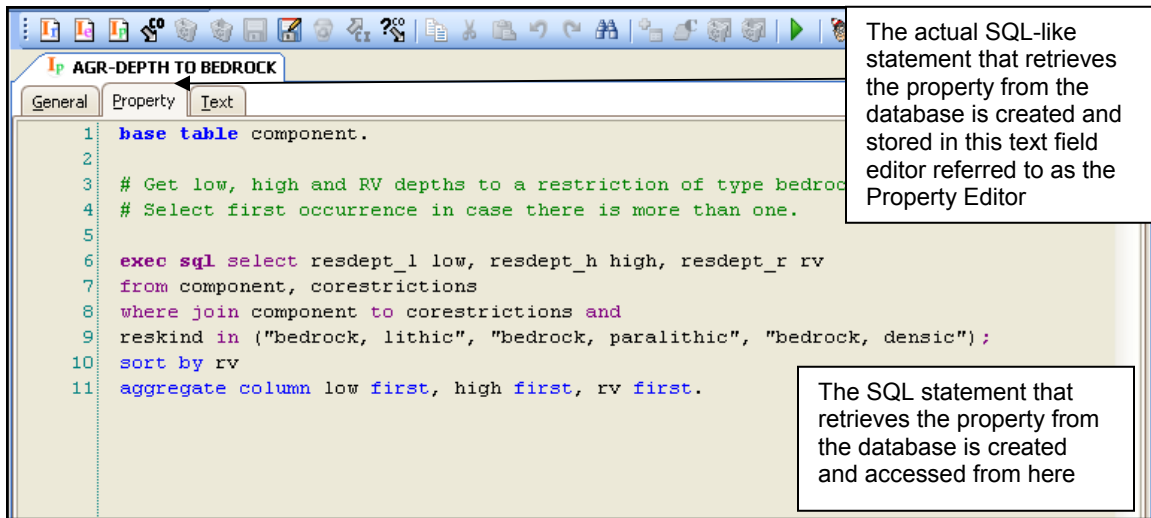
Properties

A *property* is the specified soil data retrieved from the soil database. The term *property* can also refer to the SQL-like statement that retrieves the soil data. Properties are stored in the Interpretations Explorer under the Property folder and organized by NASIS Site. A property used by an Evaluation must create variables named Low, High or RV. Case does not matter. This allows the evaluation process to search the property's symbol table for the correct entries. It is important to note that the user must also set a choice list field in the property record to tell what the expected return values will be: high-low, high-low-rv, or just rv. The evaluation will expect to find the corresponding variable names.



The property record also contains fields to specify the data type and default value for the property results. The data type is either character or numeric, and must correspond to the type of data produced by the property script. The default value is optional. It is used to replace null values in the property results. If a null value is not replaced by a default, the evaluation will interpret the null as an unknown, resulting in a 0 to 1 evaluation range.

Each property must have a "base table". When an evaluation requests data from a property it specifies which row of the base table the data should be produced for, by passing the values of the primary key for that row. It is not possible to mix properties with different base tables in a set of interpretations. The report specifies a base table, and all properties used by the rules and evaluations for that report must use the same base table. A property is written in the text editor as shown in the Figure on the next page.



The actual SQL-like statement that retrieves the property from the database is created and stored in this text field editor referred to as the Property Editor

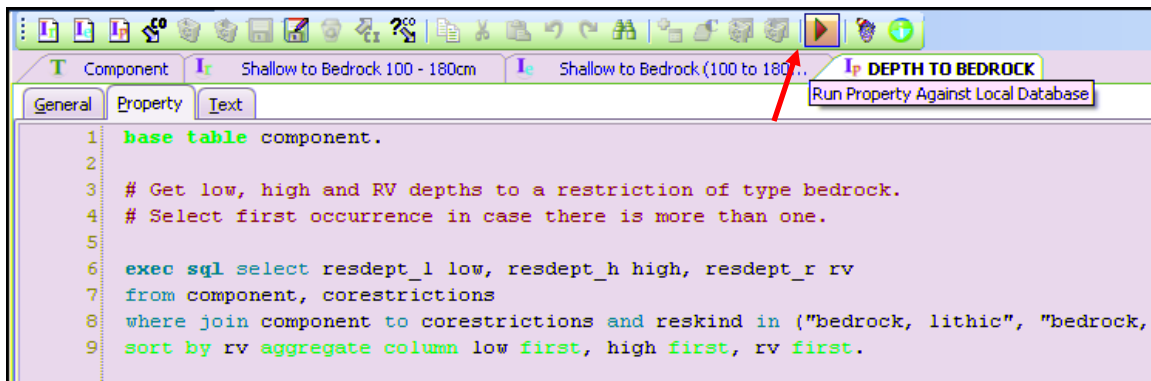
```

1 base table component.
2
3 # Get low, high and RV depths to a restriction of type bedrock
4 # Select first occurrence in case there is more than one.
5
6 exec sql select resdept_l low, resdept_h high, resdept_r rv
7 from component, corestrictions
8 where join component to corestrictions and
9 reskind in ("bedrock, lithic", "bedrock, paralithic", "bedrock, densic");
10 sort by rv
11 aggregate column low first, high first, rv first.
    
```

The SQL statement that retrieves the property from the database is created and accessed from here

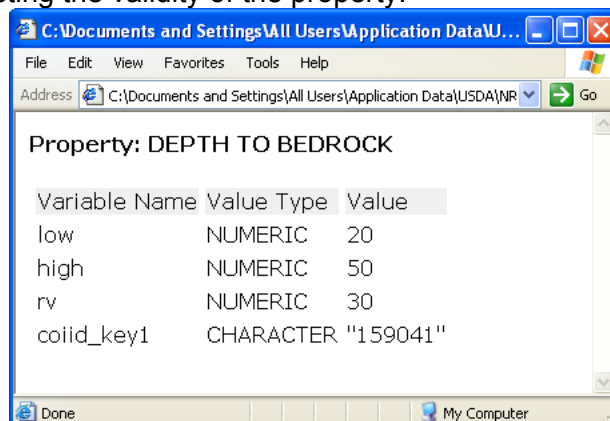
Testing Properties

Properties can be run against a single component to test the property. This is done by selecting a single component in the Component table, returning to the Property and choosing to "Run Property Against Local Database" from the Interpretation Menu or the Editor Toolbar (as shown below).



The screenshot shows the NASIS Property Editor with the property 'DEPTH TO BEDROCK' selected. The 'Run Property Against Local Database' button is highlighted in the toolbar.

The report provides the results of the property against the specific component. This report is used for testing the validity of the property.

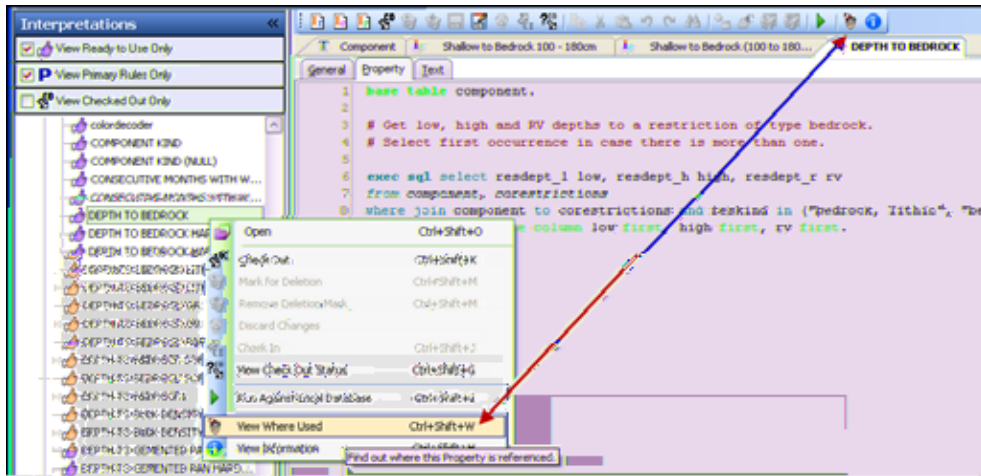


Property: DEPTH TO BEDROCK

Variable Name	Value Type	Value
low	NUMERIC	20
high	NUMERIC	50
rv	NUMERIC	30
coliid_key1	CHARACTER	"159041"

Where Used “Properties”

Properties are developed to be used by more than one evaluation. The “Where Used” icon or menu option is used to identify evaluations using a specific property. This allows the user to identify the impact of any changes made to the property. Highlight the property in the Interpretation Explorer, or with the Property open in the Editor Panel, choose “Where Used” icon or menu option.



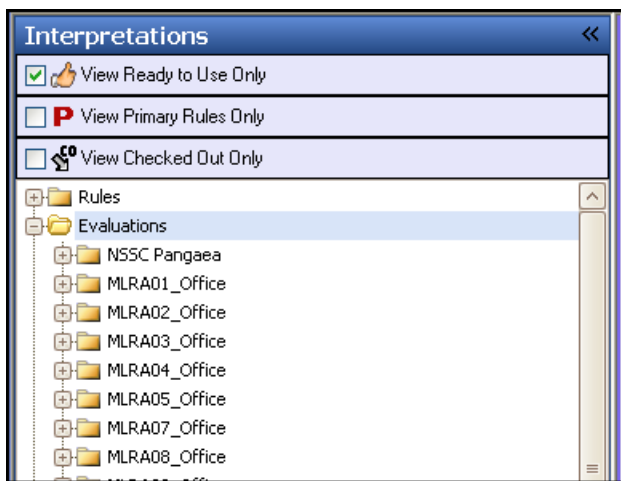
The resulting report identifies the Evaluations using the selected property:

Evaluation Name	Evaluation Site
IDepth to bedrock (hard or soft) 25-50cm - MO2	MLRA02_Office
IDepth to bedrock (hard or soft) 25-50cm - MO2	MLRA08_Office
4brigrLHH	MLRA12_Office
AAA -Biffy BR	MLRA13_Office
ak dm Shallow to Bedrock (100 to 150 cm (40 to 60"))	MLRA17_Office
ak dm Shallow to Bedrock less than 7 feet	MLRA17_Office
AWM-Depth to Bedrock (20-60") 51-152cm	MLRA05_Office
Bedrock	MLRA16_Office
brigrLHH	MLRA12_Office
Cecil Shallow to Bedrock 12 - 40in (30 to 100cm)	MLRA13_Office
CLS - Bedrock less than 138cm	MLRA05_Office
cp Not Shallow to Bedrock (100 to 150 cm (40 to 60"))	MLRA17_Office

Evaluations

An *evaluation* is an assessment of a particular soil property for its relative impact as a limiting feature. It is the relationship between the property and its impact on the interpretive application. The evaluation is basically a transformation of the data returned from the property into the domain of real numbers from 0 to 1, where 0 means the test is completely false, 1 means the test is completely true, and numbers in between represent the degree of truth. The evaluation can return up to 4 values, representing the lowest and highest evaluations for the full range of the property's values, and the lowest and highest evaluations for the property's representative values.

Evaluations are stored in the Evaluation folder in the Interpretations Explorer and organized by NASIS Site as shown this figure.



Evaluations are named for the limiting feature. The Evaluation is documented in the Description field under the General tab:

NASIS User Guide

ENG - Septic Tank Absorption F... Filter Field 60 - 150cm (24-60... Filter Field 60 to 150cm (24 t...

General Evaluation Text

Seq:

Evaluation Name: Filter Field 60 to 150cm (24 to 60")

Description:

7/99 Modification:
This evaluation checks the filtering capacity of the soil. The maximum high, low, and representative values for sat_hydraulic_conductivity are selected for each horizon between 24 to 72 inches and above any restrictive layer.

The fuzzy space is defined as the condition:
Where the soil horizon property sat_hydraulic_conductivity > 42 micrometers/second (6.0 inches/hr), the evaluation is absolutely true and the restrictive feature is poor effluent filter field.
AND
Where the soil horizon property sat_hydraulic_conductivity <= 42 micrometers/second (6.0 inches/hour), the evaluation is absolutely false and the restrictive feature is not poor effluent filter field.

If no data is entered, then an artificial default value(s) is used.

In 1990 the evaluation depth was extended from a base of 40 inches to a base of 60 inches.

Ready to use? ☒

Evaluation NASIS Site: NSSC Pangaea

NASIS Group: Interp/Engineering

Object Last Updated: 10/3/2006 7:05:02 AM

Object Last Updated By: Finnell, Paul R.

Rec ID: 224

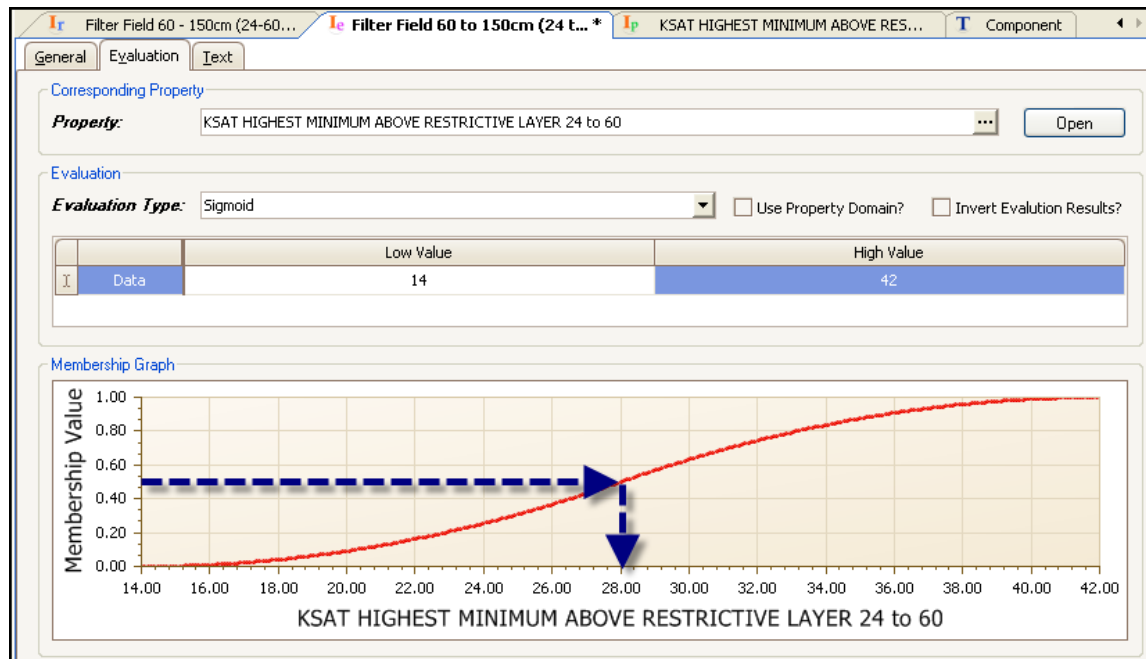
The first step in creating an evaluation is to select a property to be evaluated. The user interface does this with a choice list having a database option, in the same way the user selects other objects like queries or reports. The selected combination of database (NASIS site) and property name uniquely identifies a property record.

NASIS User Guide

The definition of a property specifies the type of data the property returns, which can be either character or numeric. All types of evaluations can be used with numeric data, but **only a crisp evaluation can be used with character data**. The property definition also specifies whether the property returns a single (representative) value, a range (low and high), or both (all three values). The property may also have a default value, which the evaluation process uses any time the property returns a null value, and a minimum and maximum value for the property's domain.

Property Name:	KSAT HIGHEST MINIMUM ABOVE RESTRICTIVE LAYER 24 to 60
Description:	Finds the lowest value for permeability (K-Sat) in horizons that are above a restrictive feature. Returns values for low, high, and rv: each has a single value.
Data Type:	Numeric
Modality:	High, Low, Representative Value
Units:	UM/S
Minimum:	
Maximum:	
Default Value:	

Using the principles of fuzzy logic (fully explained in Chapter 19), a graph is created to identify the impact in the Evaluation Editor, as shown on the next page. The graph is used to evaluate the soil property and its relative truthfulness of being a limiting feature. For example, if a soil has a Ksat Class of absolutely too rapid (assuming greater than or equal to 42 micrometers per second), the fuzzy value would be 1. If the Ksat is absolutely not too rapid (assuming less than 14 micrometers per second), the fuzzy value would be 0. Fuzzy logic evaluates the property when it falls in the range between absolutely too rapid (1) and absolutely not too rapid (0). For example, if the soil Ksat is moderately slow, it could be plotted as 0.5, meaning that the soil has a 0.5 truthfulness of water movement being absolutely not too rapid (28.00 micrometers per second).



Evaluations specify the ranges used to assess the relative truthfulness of a statement about a soil property. For example, the evaluation criteria set the limits for determining whether the statements “soil Ksat is too rapid” and “soil Ksat is not too rapid” are absolutely not true, absolutely true, or somewhere in between.

Fuzzy logic allows for the relative statements about soil properties. For example, in the traditional view, the logical statement A AND B means that both A and B must be absolutely true for the statement to be true. But with fuzzy logic, each of A and B represent some degree of truthfulness (membership in a class), from absolutely *not* true to absolutely true. The statement A AND B evaluates the minimum truthfulness for either of A and B. For example, if a soil must be deep and dry in March to be suitable for early tillage, and the soil is deep but moist, the statement that the soil is deep is true but the statement that the soil is dry is only partly true. Therefore, the soil is partly suited to early tillage.

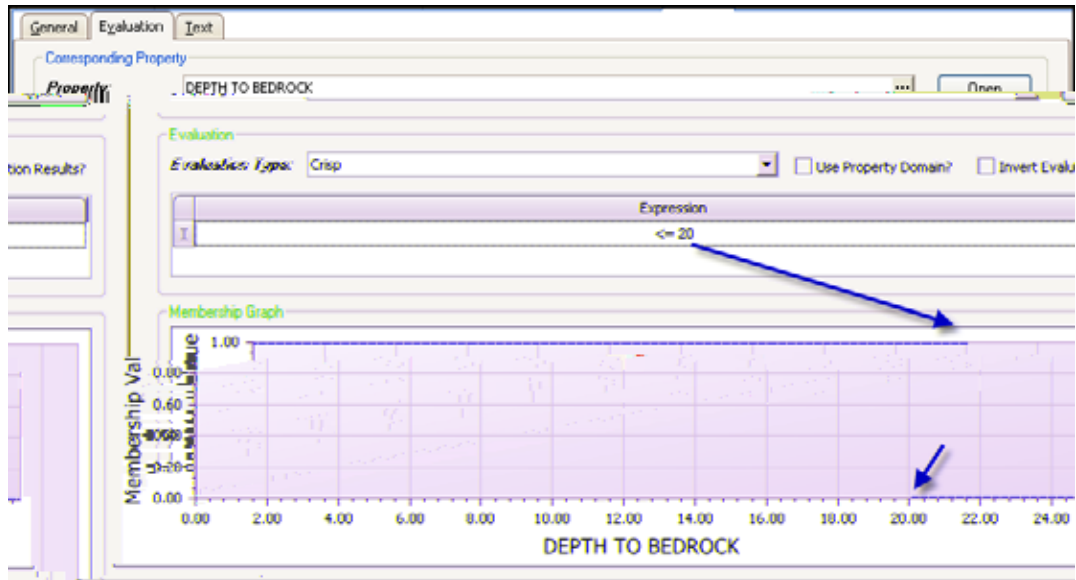
This statement about soil behavior can be understood in terms of relative truthfulness. If the soil is very nearly dry, then its degree of truthfulness is very nearly 1 (perhaps 0.9), and it is very nearly suited (0.9) to early tillage. The degree of truthfulness is numerical and can be used in mathematical operations or converted into classes such as slightly limited, somewhat limited, and very limited. Regardless of how you use it, fuzzy logic allows you to make more intuitive, more precise, and more useful interpretations. This concept helps you deal with relative statements about soil properties. If you have not already done so, refer to Chapter 19 for a full discussion of fuzzy logic.

Evaluation Types

There are several evaluation types or curves that can be used to assess a soil property for its relative impact. Both crisp and fuzzy systems curve options are available.

Crisp Curve

The crisp curve is used to represent classed data sets that have well defined definite boundaries. For instance, soils can be evaluated to find those with a depth to bedrock less than or equal to 20 cm as being absolutely “too shallow” (1).



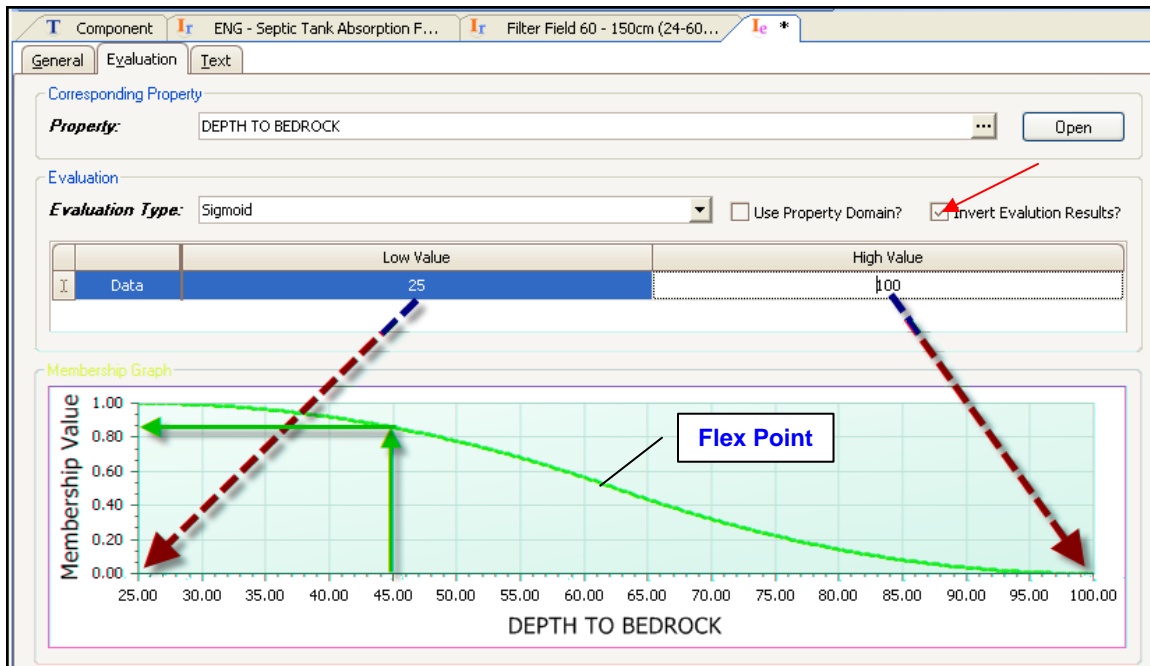
Crisp set evaluations are the only ones that can be used for character data. While it is possible to use the operators <, <=, > or >= they do not make as much sense for character property type.

Sigmoid Curve

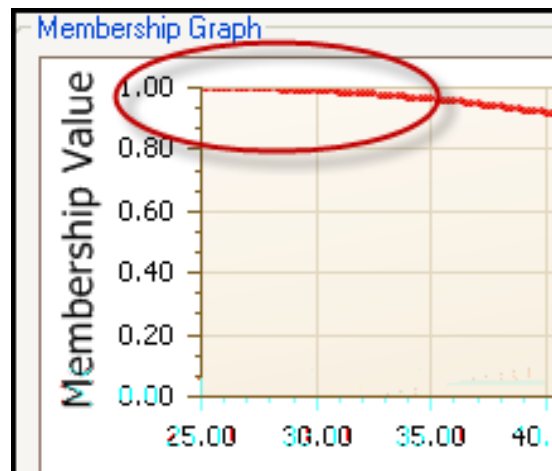
The sigmoid curve is used to represent an increasing nonlinear fuzzy data set. The fuzzy set moves from no membership at the left hand side to full membership on the right hand side. The membership function is pivoted around the 50% membership point. This is called the inflection point. This S shaped curve is used to depict natural processes by time.

In this instance the soil is evaluated between the depths of 25 and 100 cm. The depth less than 25 returns a fuzzy value of 1 (absolutely limiting) and the depth greater than 100 returns a fuzzy value of 0 (absolutely not limiting). Values between 25 and 100 are assigned membership values based on the intersection of the sigmoid curve and the soil depth. (Note that the graph is set “Invert Evaluation Results”.)

NASIS User Guide

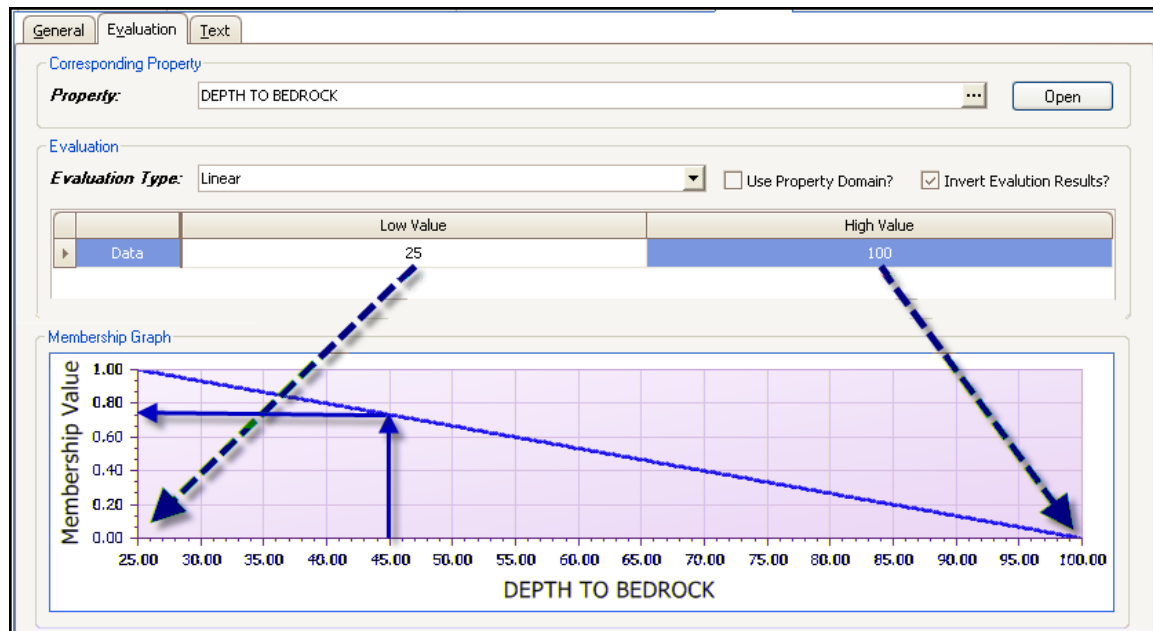


The Sigmoid curve must be used with caution due to the curvature at the beginning and end points. Note that the values between 25.00 and 33.00 have a minor differentiation of the Membership Value. This should be seriously considered when developing an evaluation using a sigmoid curve and the soil properties should be assigned as accurately as possible to identify the absolutes.



Linear Curve

The linear fuzzy surface is considered to be the simplest representation of a fuzzy data set. The membership value (y) is proportional to the domain value (x). The depth to bedrock less than 25 returns a fuzzy value of 1 (absolutely limiting) and the depth greater than 100 returns a fuzzy value of 0 (absolutely not limiting). Values between 25 and 100 are assigned membership values based on the intersection of the line and the soil depth. (Note that the graph is set "Invert Evaluation Results.")

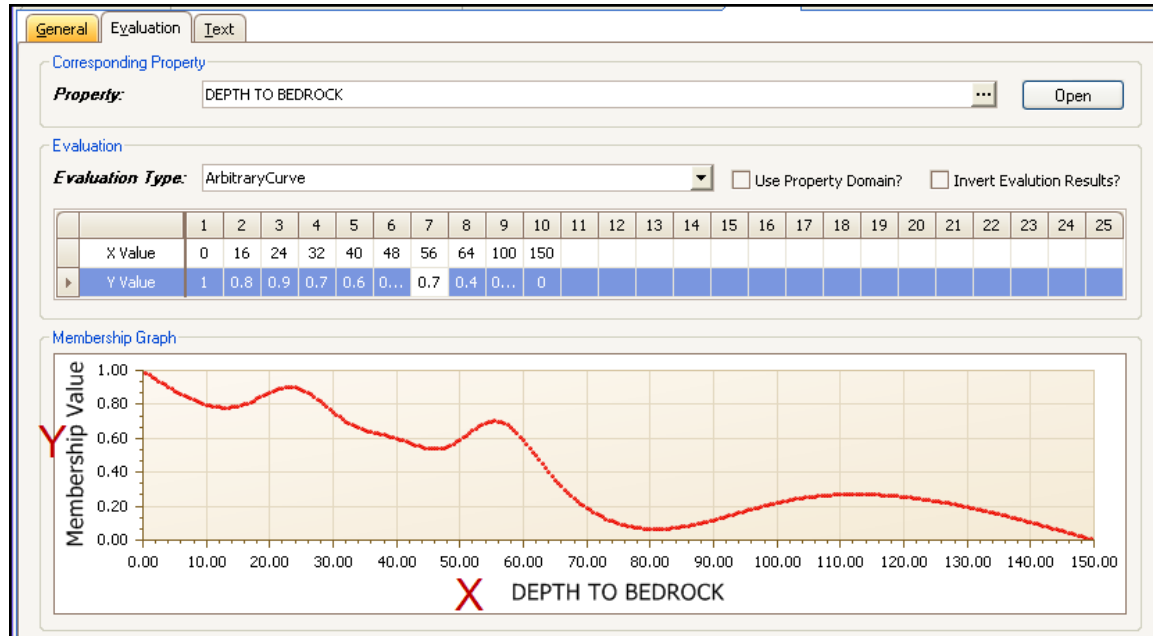


Comparison of the Sigmoid and Linear Curves

Notice the difference in the relationship of the Membership Value and Depth to Bedrock between the Sigmoid and the Linear curves. At a depth of 45 cm, the Sigmoid Curve assigns a Membership Value of 0.875 whereas the Linear Curve assigns a Membership Value of 0.725. Inverse results will appear at the 85 cm depth where the Sigmoid Curve assigns a Membership Value of 0.15 and the Linear Curve assigns a Membership Value of 0.25. Issues such as this should be considered during the planning of the interpretation.

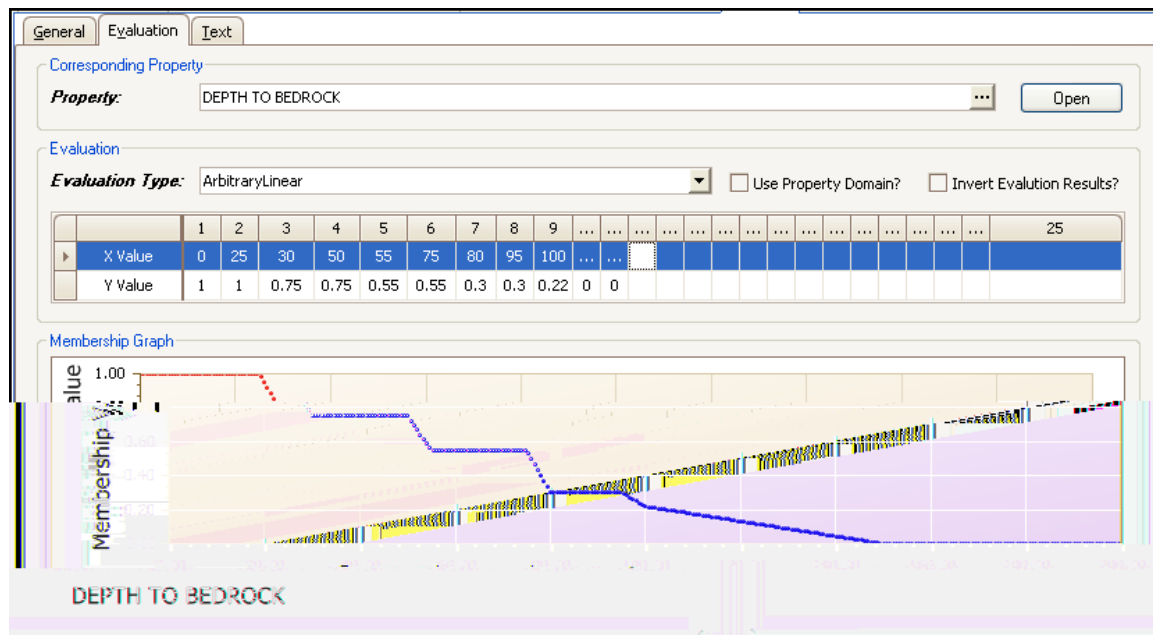
Arbitrary Curve

The arbitrary curve is used when the distribution of the membership values is not directly adaptable to standard curve architectures. Assign the soil properties to the X axis and identify the Membership Value to be assigned for each intersection on the Y axis.



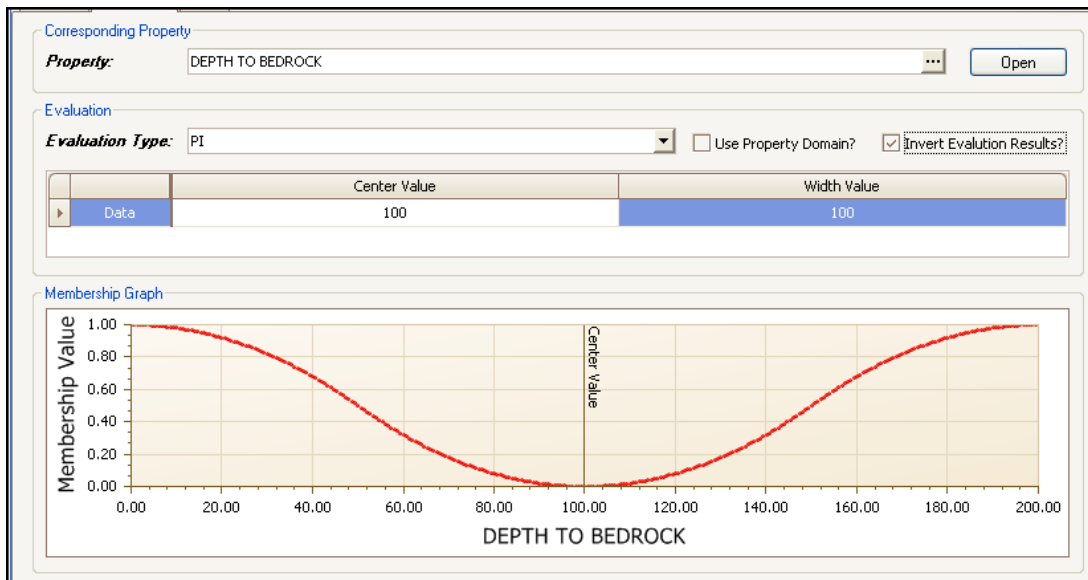
Arbitrary Linear

Similar to the Arbitrary Curve, the arbitrary linear curve is used when the distribution of the membership values needs to be defined more accurately than standard curve architectures are capable of doing. The membership values in related fuzzy data sets may fall to zero or plateau for some part of the set.



PI Curve

The PI fuzzy set is represented by a curve composed of two sigmoid curves back to back. It has a central point at which it has full membership and going either left or right of this point causes a nonlinear decline in membership value. The PI curve is used to represent a fuzzy data set that approximates a normal distribution (bell shape) around a central membership value. This inverted PI Curve would assign soil depths at 0 and at 200 a membership value of 1 (absolutely limiting) and those between it would evaluate based on the intersection of the curve and the soil depth.

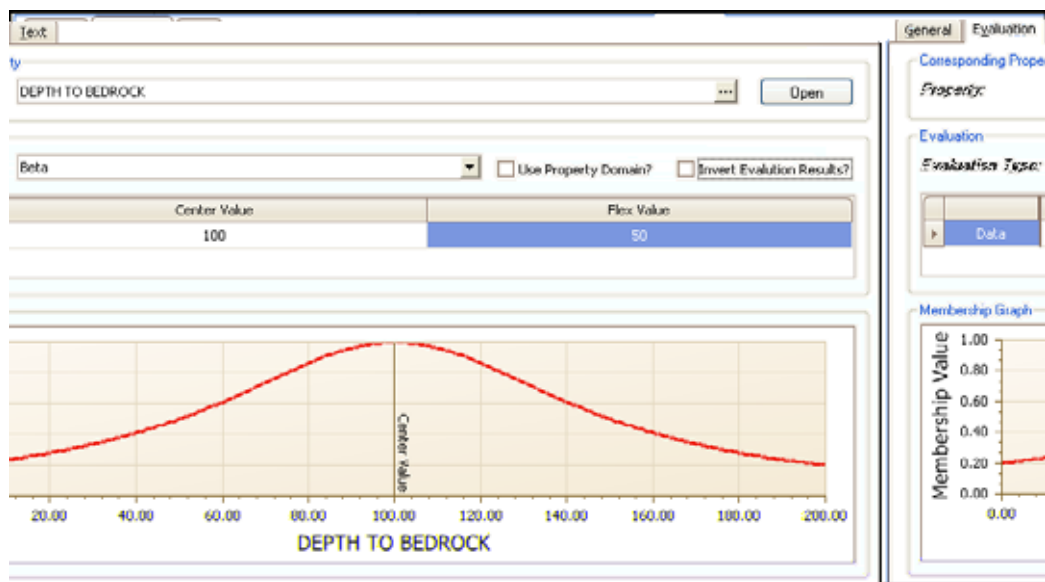


Beta Curve

The beta fuzzy set is represented by a bell type curve. It has a central point at which it has full membership and going either left or right of this point causes a nonlinear decline in membership value.

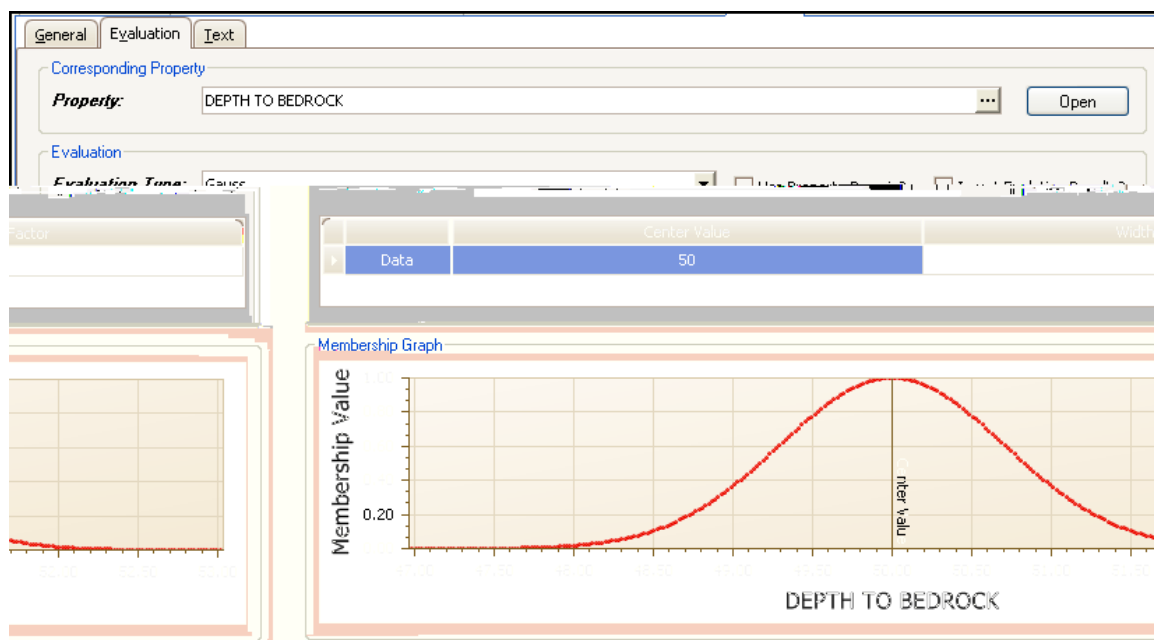
The shape of the Beta curve is hyperbolic, so it does not approach zero as quickly as a gaussian curve. The beta fuzzy set would be used to represent numbers clustered around a central point but with a different distribution than the PI or Gaussian sets.

To enter a beta fuzzy set you must provide a center value and an inflection point offset. The value at point is 1 and the value at points is 0.5. Further out from the center the value becomes smaller but never reaches exactly zero.



Gaussian Curve

The Gaussian fuzzy set is represented by a bell curve. It has a central point at which it has full membership and going either left or right of this point causes a nonlinear decline in membership value. The curve for a Gaussian fuzzy set looks similar to a PI set but is not as rounded at the top. The Gaussian curve is similar to the beta curve except for the fact that the slope of the bell curve is very steep and possesses relatively short tails. The membership value of the fuzzy data set goes to zero very quickly. This normal Gaussian curve would assign an absolute limiting value of 1 to the depth of 50 cm. All other depths would be assigned membership values based on the intersection of the curve. Mathematically speaking, the sides of a Gaussian curve are an exponential curve, while the Sigmoid curve is a quadratic or parabolic curve.



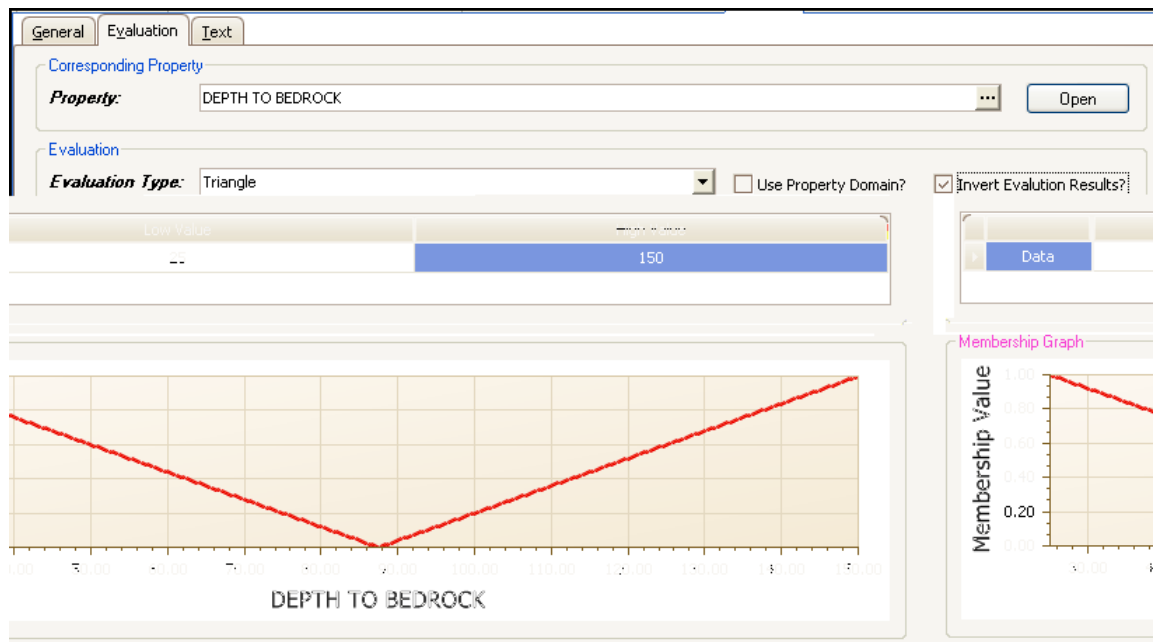
NASIS User Guide

The most common use of the Gaussian fuzzy set is to represent numbers in a statistically normal distribution. If you are describing values clustered around a central point, you may be in a situation where a Gaussian curve would work well. Gaussian sets are not as popular as PI curves for representing fuzzy numbers because it is not as easy to predict the shape of the curve for a given width factor.

To enter a Gaussian fuzzy set you must provide a center value and a width factor. Note that the width factor operates in an inverse manner—as the width factor gets larger the curve gets narrower. The value at point is 1 and as you go out from the center the value becomes very small but never reaches exactly zero.

Triangle

The Triangular fuzzy set is represented by a triangle. It has a central point at which it has full membership and going either left or right of this point causes a linear decline in membership value. The triangular curve spreads the membership values evenly across the domain (x axis) and the contour is defined through linear interpolation.



To enter a triangular fuzzy set you must provide a low value and a high value. The center point of the triangle is assumed to be half way between the low and high values, and has a membership value of 1. The inverted triangle above assigns a membership value of 1 (limiting) to those soils with bedrock depths less than 25 cm and any greater than 150 cm. The depth of 88 cm is assigned a membership value of 0 (not limiting).

Trapezoidal

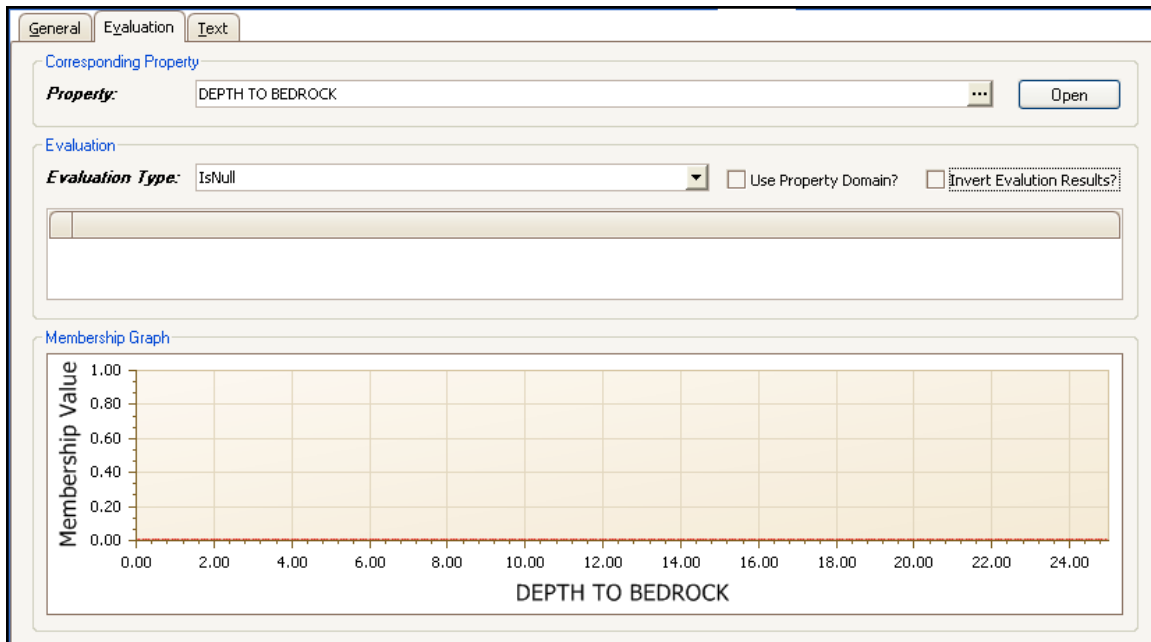
The Trapezoidal fuzzy set is similar to a triangle fuzzy set, but instead of having a single point at full membership, there are a range of points at full membership. Moving either left or right of this range causes a linear decline in membership value. The trapezoidal curve is a triangular curve truncated by a plateau. The width of the plateau is proportional to the number of membership values that are true. To enter a trapezoidal fuzzy set you must provide a low value and a high value and the minimum and maximum values for the top plateau.

NASIS User Guide



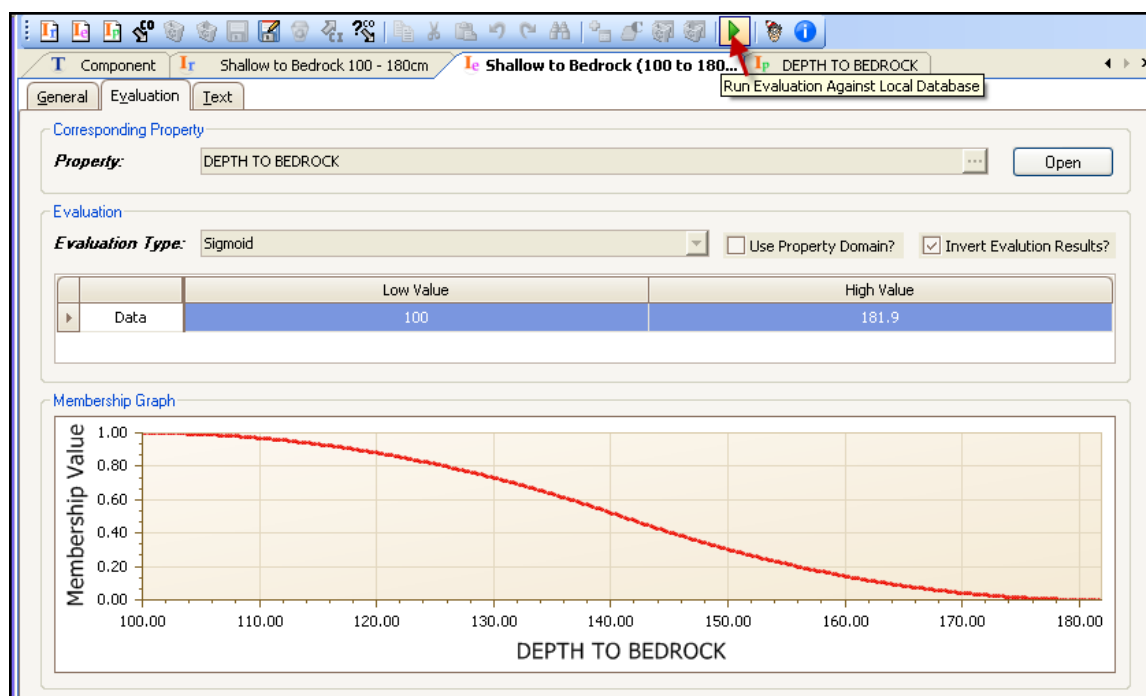
Is Null

The Is Null evaluation is used to assign a value to those properties that are used in the interpretation but are not populated in the database. Simply, a null field can be assigned any single value inclusively between 0 and 1.

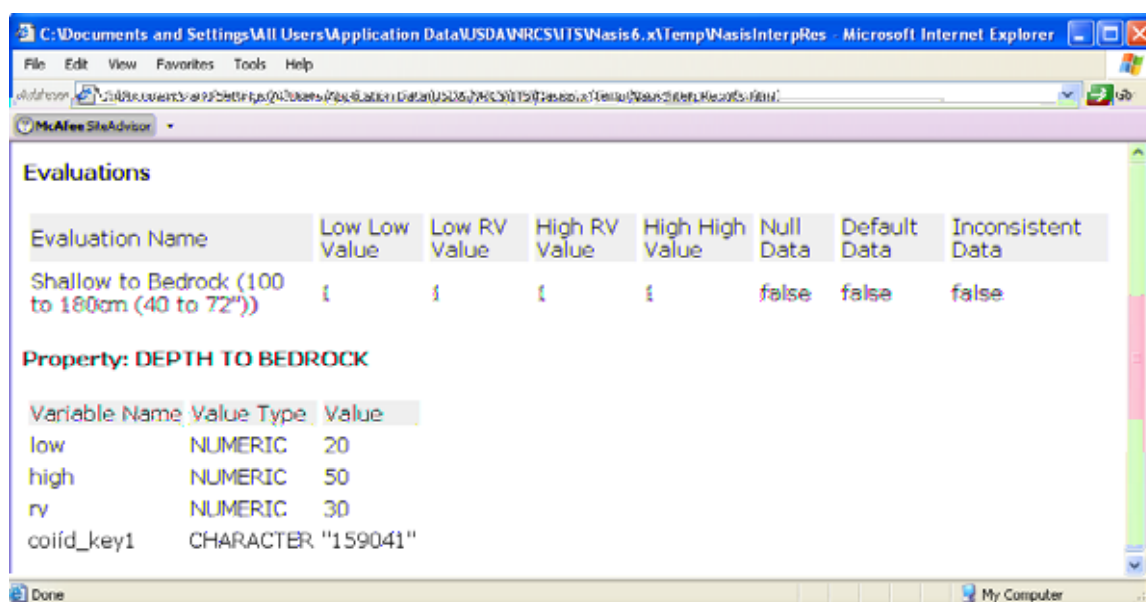


Testing Evaluations

Evaluations can be run against a single component to test the results of the evaluation. This is done by selecting a single component in the Component table, returning to the Evaluation and choosing to “Run Evaluation Against Local Database” from the Interpretation Menu or the Editor Toolbar (as shown below).



The resulting report is used to test the Evaluation results:



Using Multiple Values

When multiple input values are provided from a property, the evaluation returns a range of membership values. The following cases can occur.

If a property provides ranged data with a low and high value, the two values are evaluated separately. The lower membership value is called the "low-low" result and the higher value is called the "high-high". Note that the lower input value does not necessarily produce the low-low result. Depending on the evaluation function the smaller input value could produce a higher membership value, which would then become the high-high result. A property can also return data from more than one database row at once, so there could be several low and high inputs. Still, the lowest result is the low-low and the highest is the high-high.

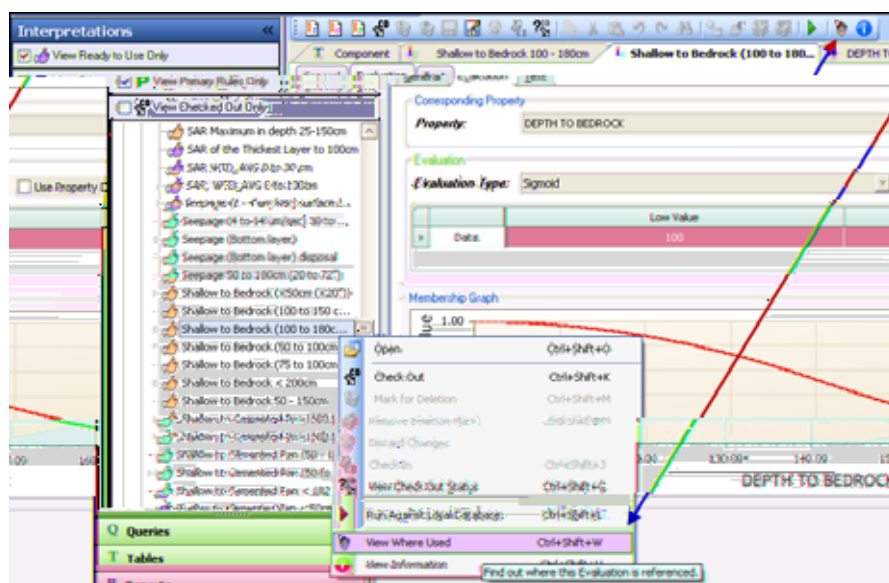
If a property provides representative values, they are evaluated separately from the low and high values. The lowest result of this group is the "low-rv" value, and the highest is the "high-rv" value. If only one representative value is provided, the low-ry and high-ry results are equal.

Evaluations							
Evaluation Name	Low Low Value	Low RV Value	High RV Value	High High Value	Null Data	Default Data	Inconsistent Data
Shallow to Bedrock (100 to 180cm (40 to 72"))	1	1	1	1	false	false	false

If a null value is provided from a property, and there is no default value defined, the result is considered to be "unknown", meaning that its membership value could be anything from 0 to 1 (unless the NULL evaluation type is used). If a null occurs in the low or high input columns, the low-low becomes 0 and the high-high becomes 1. If the null occurs in the representative value column, the low-ry becomes 0 and the high-ry becomes 1. In addition, if any nulls are provided from a property a "Null Data" flag is set in the evaluation result, which can be used during rule processing to handle cases where the absence of data is significant.

Where Used “Evaluations”

Evaluations are developed to be used by more than one Rule. The “Where Used” icon or menu option is used to identify rules using a specific evaluation. This allows the user to identify the rules that will be impacted due to any changes made to the evaluation. Highlight the evaluation in the Interpretation Explorer, or with the Evaluation open in the Editor Panel, choose “Where Used” icon or menu option.

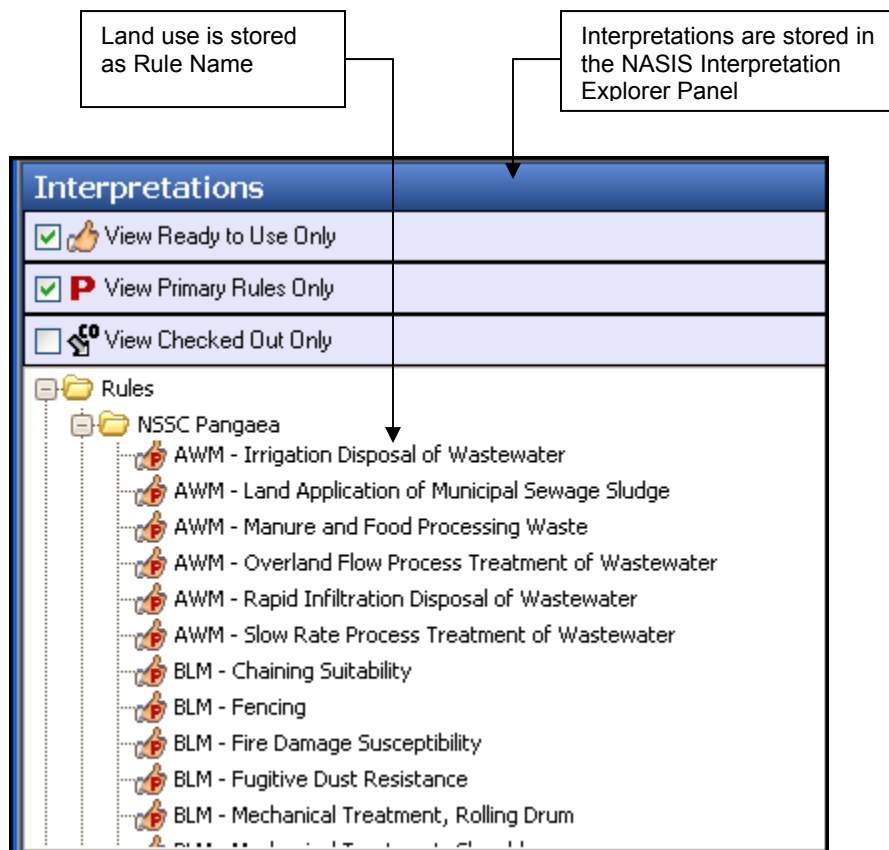


The report provides the Property name used in the Evaluation and the Rule(s) using the specific evaluation.

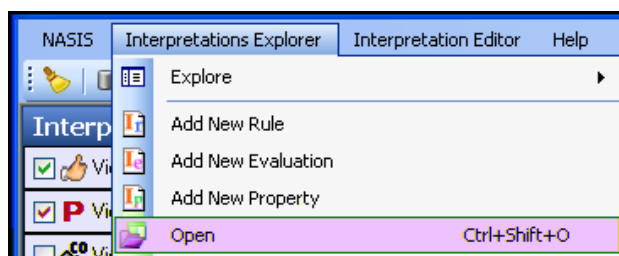
Evaluation Shallow to Bedrock (100 to 180cm (40 to 72"))	
Property Used by Evaluation	
Property Name	Property Site
Shallow to Bedrock (100 to 180cm)	WIS - Outcrops
Rules using this Evaluation	
Rule Name	Rule Site
Shallow to Bedrock (100 to 180cm)	WIS - Outcrops

NASIS interpretations

An *Interpretation* or primary rule is a root rule in NASIS. The interpretation uses *Evaluations* and *Sub Rules* to derive interpretive values. The interpretation is a logical statement about land use, limiting features, and the relationship among limiting features. The land use is identified in the Rule Name, as depicted in the image below. The interpretation's limiting features and the relationship among them (relative weights and interactions) are depicted graphically with a special Rule Editor (see page 22). NASIS interpretations are stored in the Interpretation Explorer panel, organized by the NASIS Site and identified by the letter “P” in the graphical “thumbs up” icon.

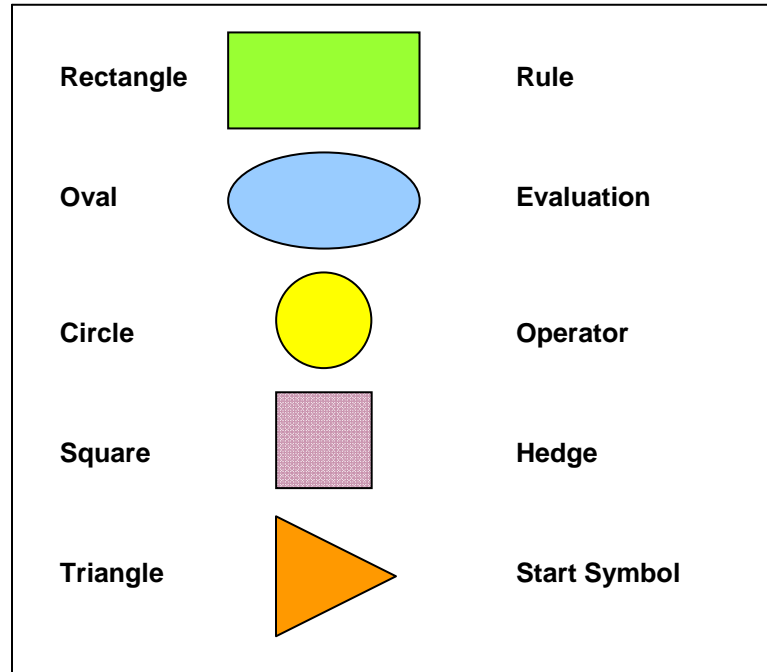


Limiting features, the relationships among the Sub Rules and evaluations, and their link to the interpretation are depicted in a special Rule Editor accessed when the interpretation is opened in the Editor Panel. Interpretations are loaded into the Editor Panel by using the “open” on the Interpretations Explorer menu, using the right click menu, double-clicking the specific interpretation, or using the hot keys “Ctrl+Shift+O”.



Rule Editor Symbols

The Rule Editor lets you illustrate the interpretation or sub rule graphically with symbols called rule components. Refer to the figure below for a description of each rule component.



Rule Components and Symbols.

Start State

Every rule begins with a start state. The start symbol is shown as an upside down triangle in the rule editor. There can be just one component attached to the start state.

Operators

Operators are shown as circles in the rule editor. Operators require at least one other component to be attached as operands. Many operators require a specific number of operands and are highlighted as "incomplete" until the correct number of operands is attached.

Hedges

Hedges are shown as squares in the rule editor. All hedges pass on the weight of their children, except for the weight hedge which sets it to some value other than 0.

Evaluations

An evaluation is shown as an oval in the rule editor. A rule can refer to an evaluation of a database property. In fact this is how rules are connected to the database.

Rules

A rule is shown as a rectangle on the rule editor. A rule can use the result of another rule as part of its definition. This is a rule reference. Rules cannot be recursive. If A is a rule then A cannot be referenced either directly or indirectly by rule A.

NASIS User Guide

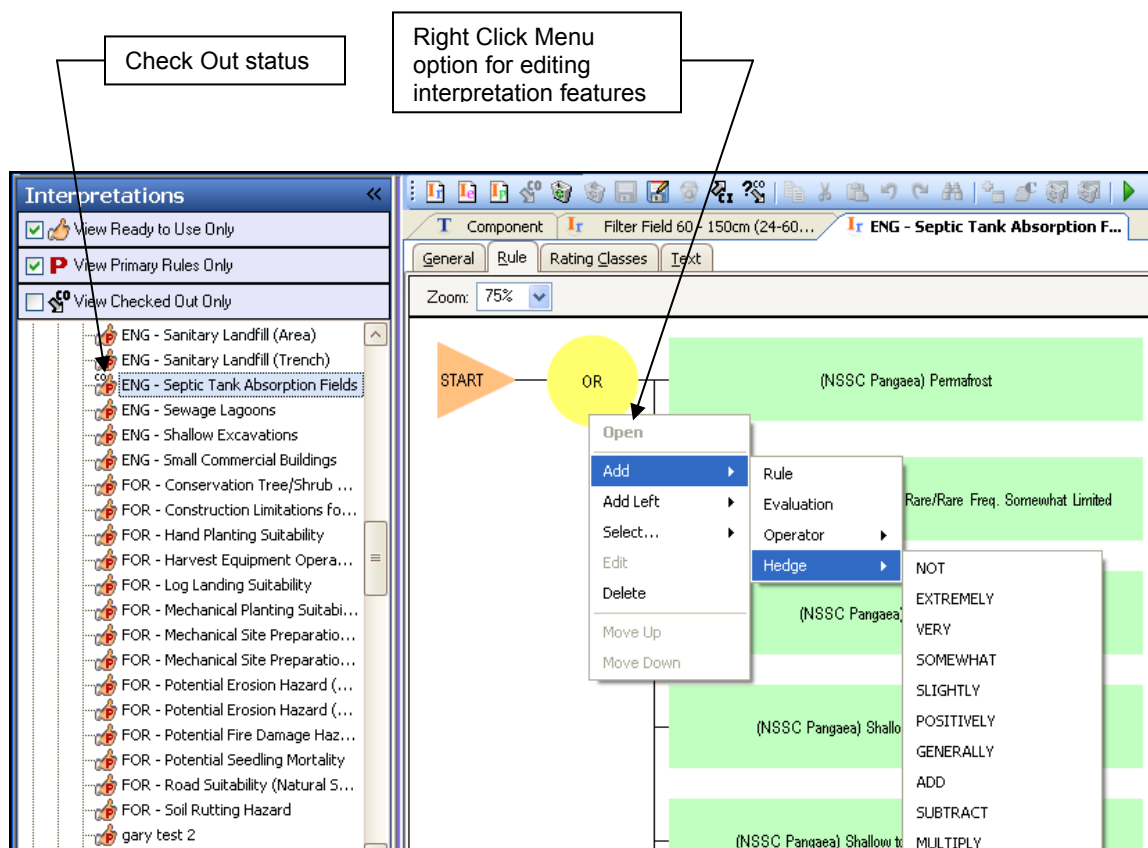
For an interpretation, its' limiting features and the relationships among them (relative weights and interactions) are depicted graphically in a special Rule Editor



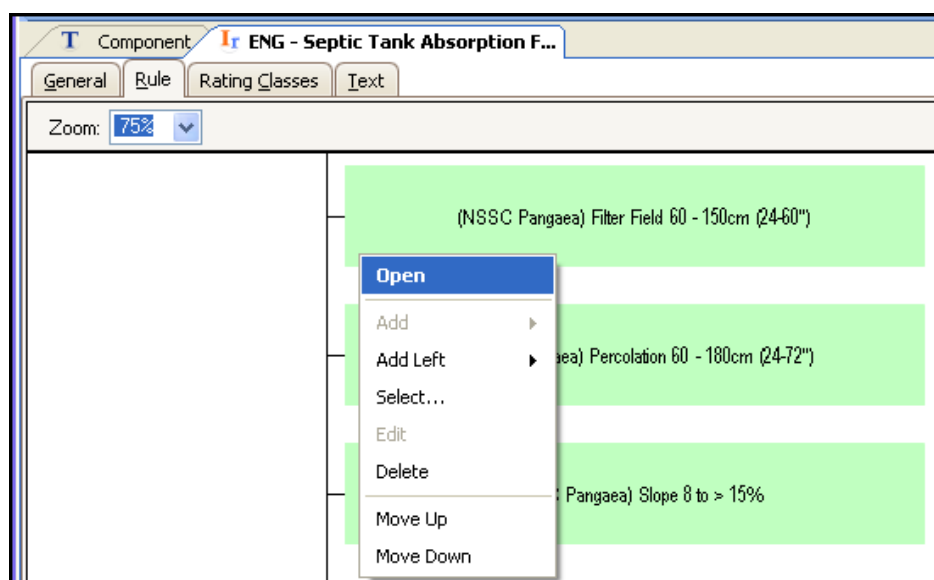
Rule Editor Depicting Sub Rules

NASIS User Guide

The existing interpretation must be “Checked out” before edits can be made. After being checked out, a menu option lets you edit to add operator, hedge, sub rule and/or evaluation.

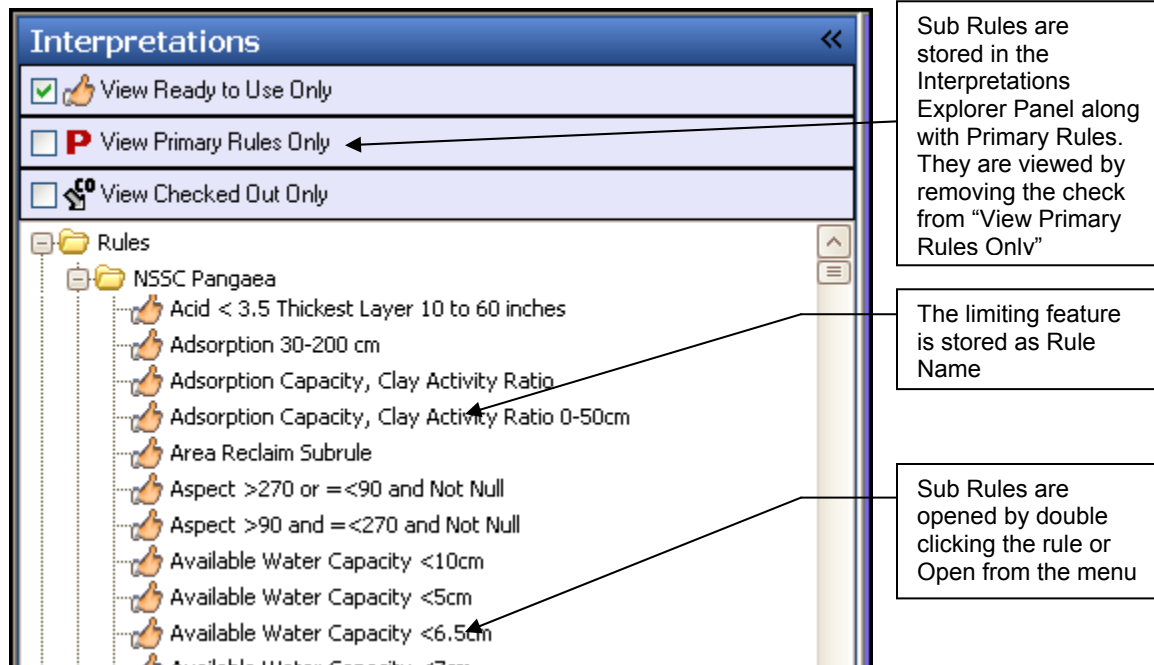


If the Interpretation is checked out, the Sub Rules can be opened by double clicking on the particular sub rule or using the right click menu and Open:



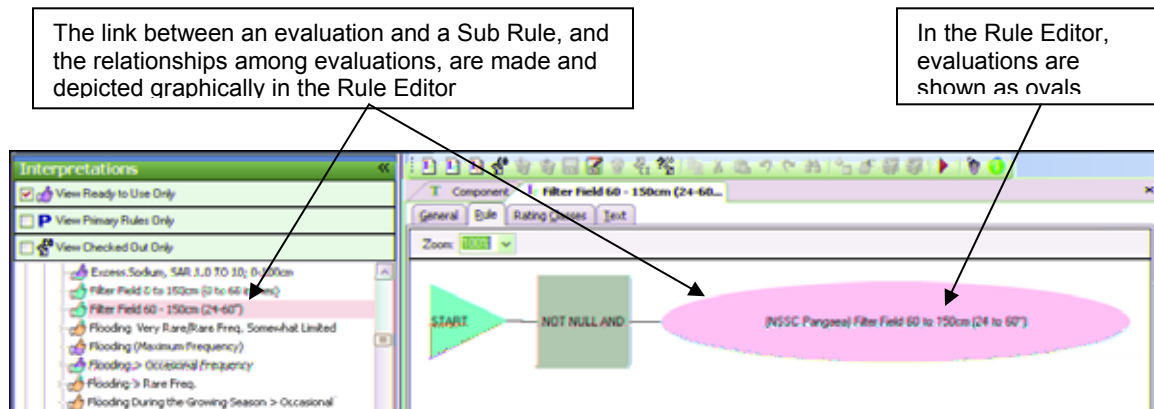
Sub Rules

A *Sub Rule* is a logical statement about one limiting feature. A Sub Rule says nothing about the land use; therefore, the same Sub Rule can be used in building different interpretations. Sub Rules are aggregated into an interpretation and are considered the basis, or building blocks, of an interpretation. Like interpretations, Sub Rules are stored in the Rule table, as shown in the image below. The limiting feature is stored as the Rule Name. A naming guideline helps you distinguish Sub Rules from interpretations.



Interpretations Explorer Panel Displaying Sub Rules

Sub Rules have at least one evaluation linked to them. The linked evaluation(s) are depicted graphically in the Rule Editor shown in the image below.



Rule Editor Showing Link to Evaluation

In order to report out interpretive results, an evaluation must be linked to a Sub Rule. The Sub Rule gives you the flexibility of reusing evaluations for different interpretations.

Testing Sub Rules

The screenshot displays the NPSA software interface. On the left, the 'Interpretations' panel lists various rules, including 'Filter Field 60 - 150cm (24-60")', which is highlighted. On the right, the 'Filter Field 60 - 150cm (24-60")' rule configuration is shown. The configuration includes a 'Zoom' dropdown set to '0.00' and a 'Filter Field 60 - 150cm (24-60")' rule. The 'Filter Field 60 - 150cm (24-60")' rule is highlighted in the 'Filter Field 60 - 150cm (24-60")' panel. The 'Filter Field 60 - 150cm (24-60")' rule is highlighted in the 'Filter Field 60 - 150cm (24-60")' panel.

Interpretation: Filter Field 60 - 150cm (24-60")		
Sub-rule Name	Depth	
No filtering	No filtering	No filtering
stopackr	stopackr	stopackr
(24-60)	(24-60)	(24-60)

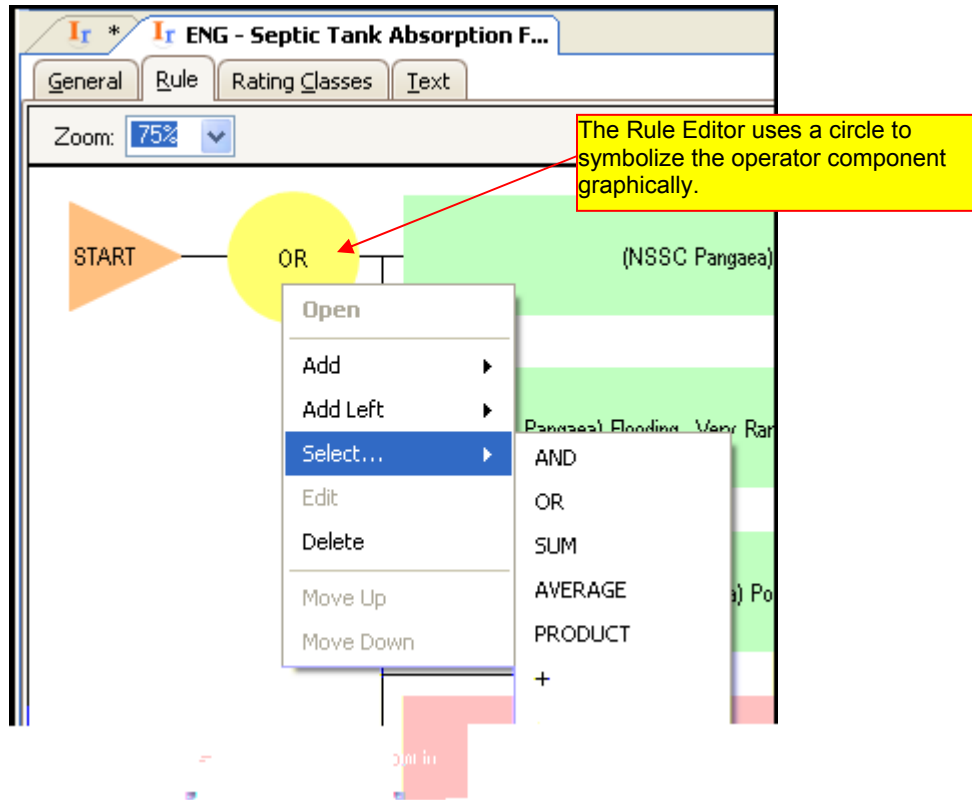
Evaluation Name	Low Low Value	Low RV Value	High RV Value	High High Value	Null Data	Default Data	Inconsistent Data
Filter Field 60to 150cm (24 to 60")	0	0	0	1	false	false	false

Property: KSAT HIGHEST MINIMUM ABOVE RESTRICTIVE LAYER 24 to 60

Variable Name	Type	Value
hzdept_r	NUMERIC	41, 69, 122
hzdepb_r	NUMERIC	69, 122, 203
ksat_l	NUMERIC	14.10999966, 14.10999966, 42.33000183
ksat_r	NUMERIC	28, 45, 92
ksat_h	NUMERIC	42.33000183, 141.1100006, 141.1100006
depth	NUMERIC	250
mht_depth	NUMERIC	203
in_range	NUMERIC	1, 1, 1
low	NUMERIC	14.10999966
high	NUMERIC	42.33000183
rv	NUMERIC	28
colid_key1	CHARACTER	"158660"

Operators

The operator defines the interactions between the limiting features (sub rules). Refer to Chapter 19 Introducing Interpretations page 19.5 for an explanation of the Operators “OR” and “AND”.



Regardless of the Operator used, the reported value is never a negative number nor is it ever greater than 1.

The “**AND**” operator will review the Membership Value numbers assigned to each sub rule and select the **Minimum** value to report for the interpretation.

The “**OR**” operator will review the Membership Value numbers assigned to each sub rule and select the **Maximum** value to report for the interpretation.

The “**SUM**” operator will review the Membership Value numbers assigned to each sub rule and **add all value** to report for the interpretation.

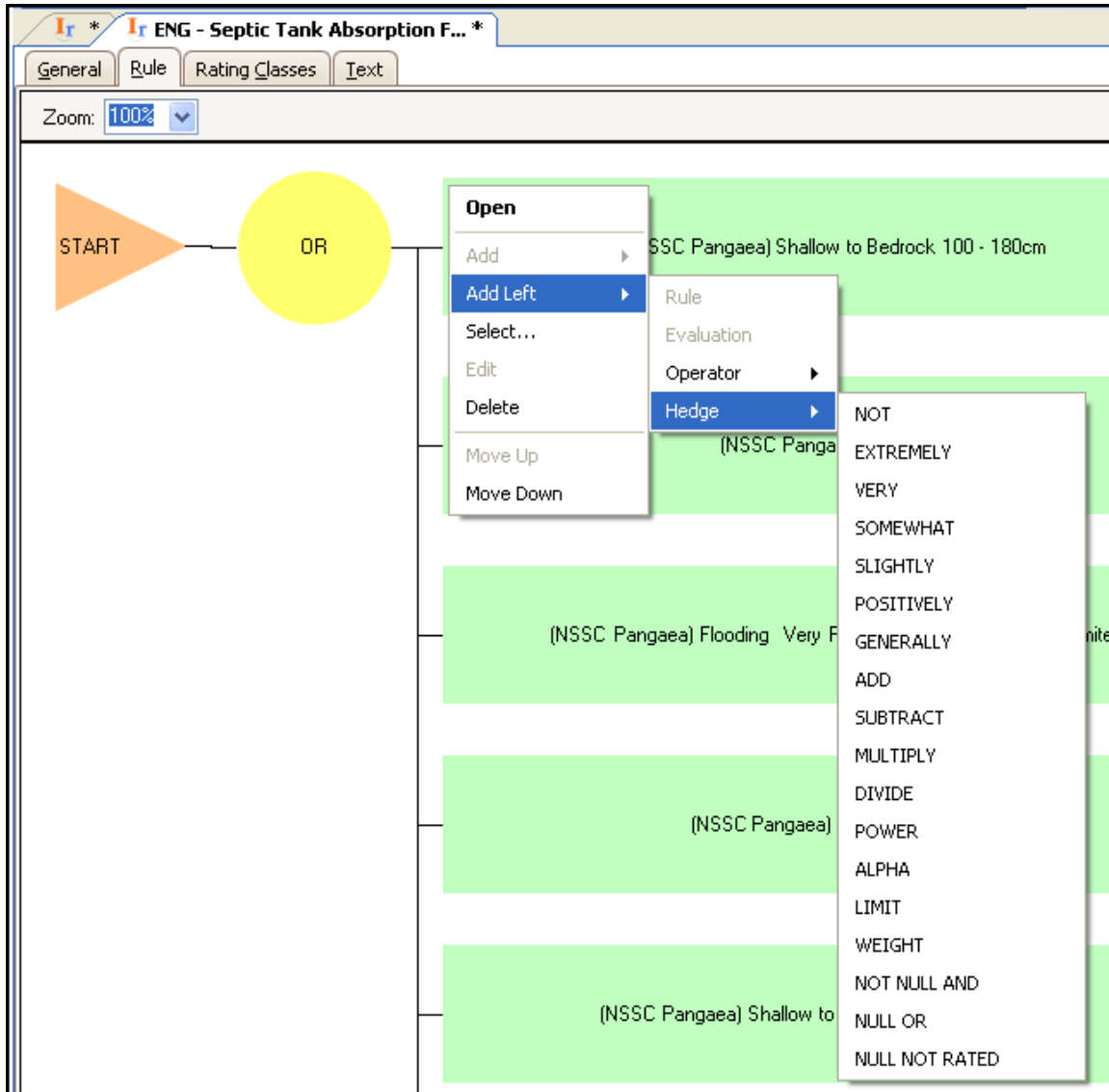
The “**AVERAGE**” operator will review the Membership Value numbers assigned to each sub rule, sum the values and divide by the number of values to report for the interpretation.

The “**PRODUCT**” operator will review the Membership Value numbers assigned to each sub rule and **multiply** the values to report for the interpretation.

The “+”, “-” and “*” operators are used to add, subtract or multiply the Membership Values between sub rules to report for the interpretation.

Hedges

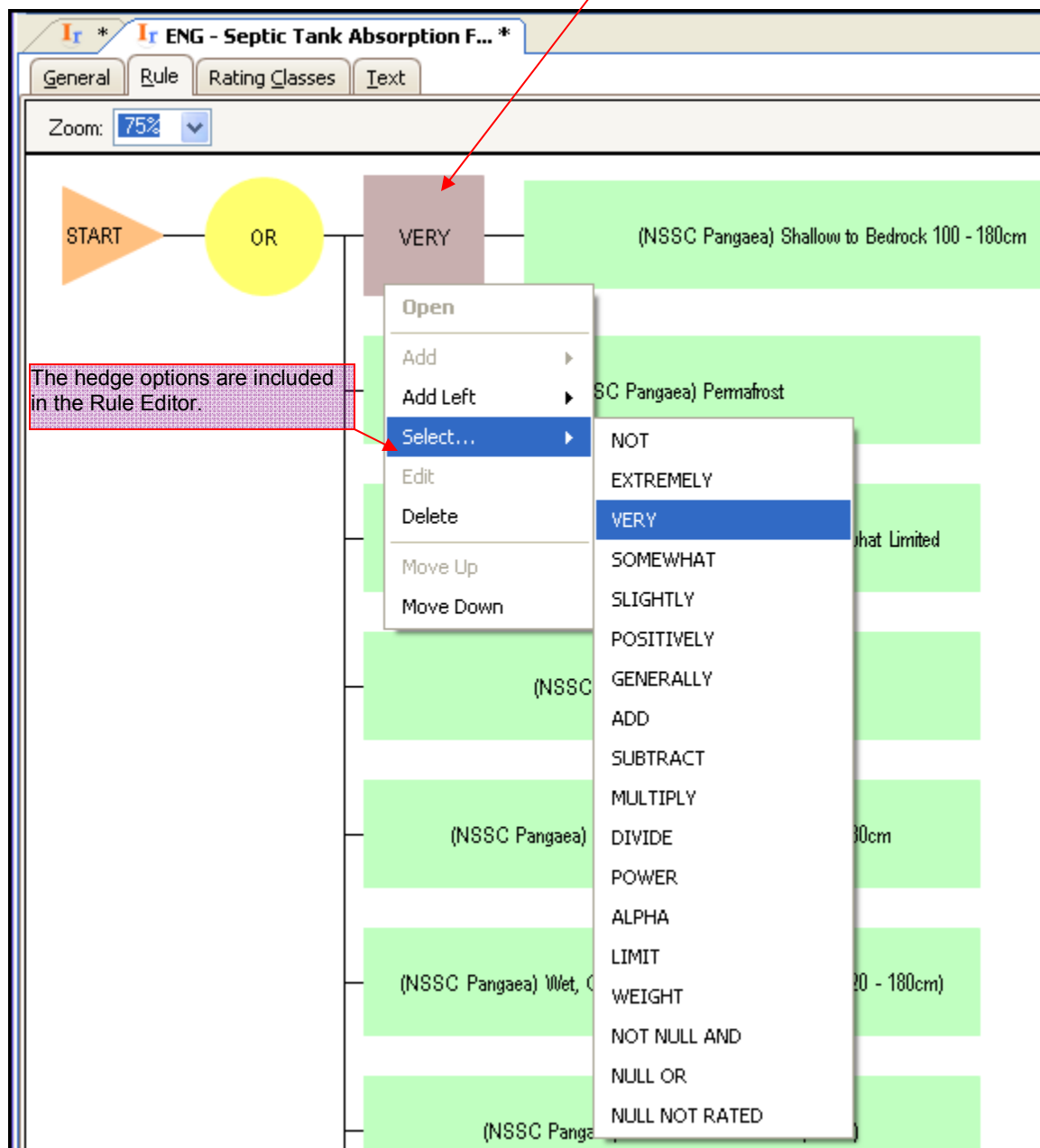
A hedge is a mathematical transformation (such as a square, square root, reciprocal, or cube), in the form of an adjective statement, that changes the meaning of an evaluation. For example, if the statement is the “soil is steep”, then the hedge “very” can be applied which performs the mathematical function “square.” The hedge is assigned using the right click menu. In this scenario, using an existing interpretation, the sub rule is highlighted and the right click menu is used to add a hedge to “Add Left”. Creating a new interpretation, the “Add” option is used to add the hedge.



NASIS User Guide

Once the hedge is added, it can be modified using the Right click menu and “Select...” command.

The Rule Editor uses a square to symbolize the hedge component graphically.



NASIS User Guide

A hedge:

- is placed after the operator,
- is placed before the sub rule in an interpretation,
- is placed before an evaluation in a sub rule, and
- can be edited after it's placed in the rule.

Although all of these hedges have a default value, they can be edited and their parameter changed to reflect the user's needs. ***Regardless of the hedge used, fuzzy numbers cannot be negative and cannot exceed a value of one.*** Thus, if the "SUM" operator is used and the sum of the fuzzy numbers exceeds a value of one, then 1.0 will be reported. This condition is known as "saturation." Consider the needs of the interpretation when using hedges.

"Null" hedges

The ability to take full advantage of the capabilities of the NASIS interpretation generator requires the database to be completely populated with accurate scientific data for the soil properties that are included in the interpretive criteria.

Dealing with the fact that there are soil properties that are not populated in a component requires an understanding of the following definitions.

Null value: A condition in which no data is returned, regardless of whether the value is absent because a row does not exist, a specific column is not populated in a row that does exist, or the conditions exclude the return of a value that does exist in the database.

Determinate null: A null value in the database for which *a legitimate conclusion can be determined* regarding its membership in the interpretive set. It implies meta-knowledge about the guidelines and conventions used to populate the database, especially with regard to recording non-existent features of a component in the database. An example would be depth to bedrock. If depth to bedrock is not populated in the database: then depth to bedrock can be assumed to be greater than the depth of observation and therefore, the soil would not be a member of the group of soils that has depth to bedrock as a restrictive feature.

Indeterminate null: A null value in the database for which *no legitimate conclusion can be determined* regarding its membership in the interpretive set. An example would be the percent clay of any soil layer. If percent clay is not populated in the database: then no logical assumption can be made because percent clay could be anything within its domain of values (0 to 100).

For any specific interpretation, if physical, chemical, or morphological characteristics required by the interpretive criteria are populated, the requirement is to generate an interpretive result for that component. This means that miscellaneous areas such as dune land, river wash, rock outcrop, and even water can be interpreted if the specific interpretive criteria require only the limited characteristics that might be populated for these components.

NASIS User Guide

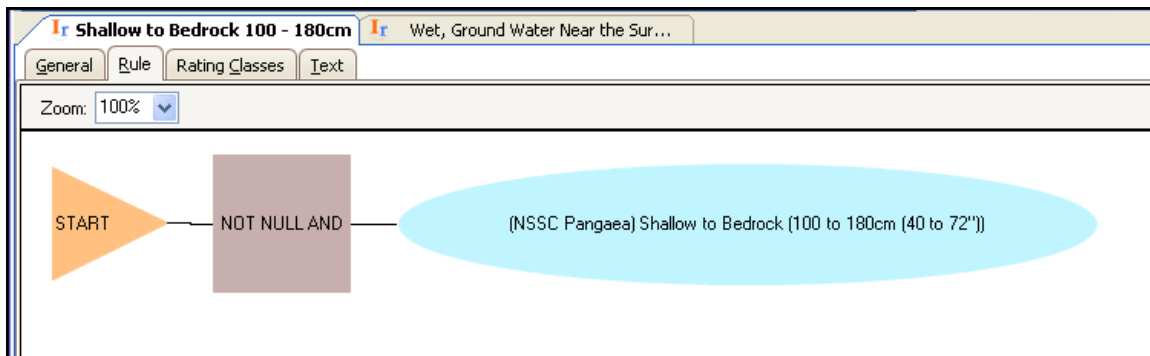
For any specific interpretation, if any required characteristic is not populated there are two outcomes:

1. If no legitimate conclusion can be determined regarding its membership in the interpretive set (indeterminate null), then return a “not rated” result for that component.
2. If a legitimate conclusion can be determined regarding its membership in the interpretive set (determinate null), then return a result based on the legitimate conclusion.

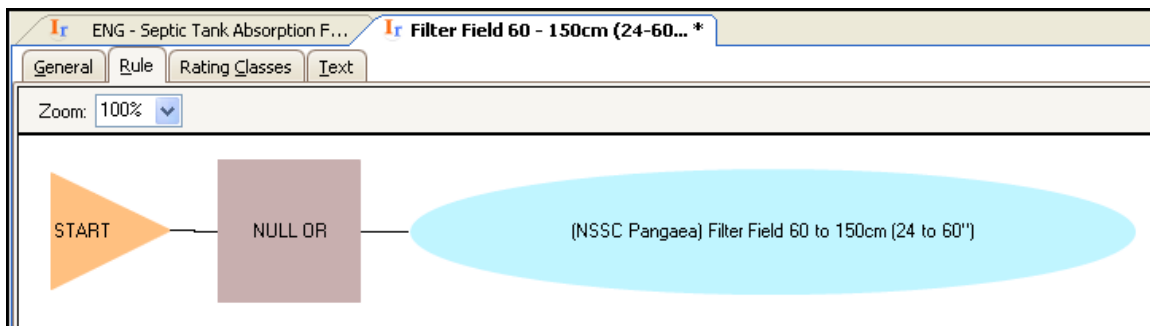
The ultimate goal is to have a completely populated database so that these types of decisions do not have to be made. The interpretation relies on a populated database to report its result. It is required for any specific interpretation that if the physical, chemical, or morphological characteristics required by the interpretive criteria are populated, then an interpretive result must be generated for that component. Null data fields require the user to make conscious decisions on its resulting impact of the interpretation.

In order for the above requirements to be fulfilled, one of the following “null” hedges (e.g. NOT NULL AND, NULL OR, or NULL NOT RATED) should be used in all sub rules.

The “**NOT NULL AND**” hedge assigns a Membership Value of 0 (not limiting) to null data elements encountered by the linked evaluation. In this “Shallow to Bedrock” sub rule, if the Component Restriction depth is not populated, then the membership value of this sub rule is assigned as 0 a non limiting value.

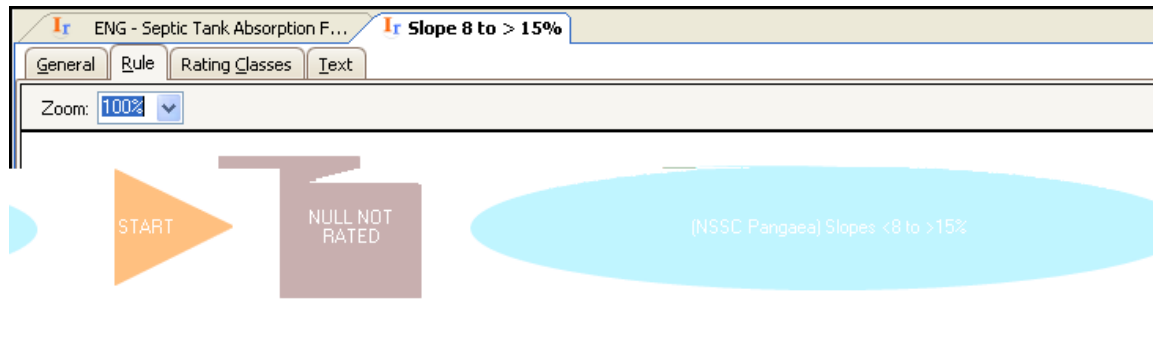


The “**NULL OR**” hedge assigns a fuzzy value of 1 (limiting value) to null data elements encountered by the linked evaluation. In this sub rule looking at the Ksat, if Ksat is not populated then the sub rule is assigned a membership value of 1, a limiting value.



NASIS User Guide

The “**NULL NOT RATED**” hedge will considers the soil characteristic so important that if the field is NULL, then the interpretation can not run to completion and provide a result. In this sub rule for slope percentage, if the slope is not populated, this hedge will assign “Not rated” to the sub rule and the interpretation will end.



Mathematical Hedges

The “**NOT**” hedge performs a reciprocal mathematical transformation of the linked evaluation.

```
Hedge: NOT (NOT A => 1 - A)
```

The “**EXTREMELY**” hedge cubes the evaluation linked to it.

```
Hedge: EXTREMELY (EXTREMELY A => A^3)
```

The “**VERY**” hedge squares the evaluation linked to it.

```
Hedge: VERY (VERY A => A^2)
```

The “**SOMEWHAT**” hedge raises the linked evaluation to the 0.5 power.

```
Hedge: SOMEWHAT (SOMEWHAT A => A^0.5)
```

The “**SLIGHTLY**” hedge raises the linked evaluation to the 0.3 power.

```
Hedge: SLIGHTLY (SLIGHTLY A => A^0.3)
```

The “**POSITIVELY**” hedge squares the linked evaluation, multiplies it by two, and subtracts the resulting quotient from one when the evaluation variable is less than 0.5. When the evaluation variable is greater than or equal to 0.5 the “**POSITIVELY**” hedge squares it and multiplies it by two.

```
Hedge: POSITIVELY (POSITIVELY A => if A<0.5, 1-2*A^2 else 2*A^2)
```

The “**GENERALLY**” hedge raises the linked evaluation to the 0.5 power, multiplies it by 0.8, and subtracts the resulting quotient from one when the evaluation variable is less than 0.5. When the evaluation variable is greater than or equal to 0.5 the “**GENERALLY**” hedge raises it to the 0.5 power and multiplies it by 0.8.

```
Hedge: GENERALLY (GENERALLY A => if A<0.5, 1-0.8*A^0.5 else 0.8*A^0.5)
```


NASIS User Guide

The “**ADD**” hedge adds a user specified number to the fuzzy result of the evaluation.

```
Hedge: ADD (A ADD 0.500000 => A + 0.500000)
```

The “**SUBTRACT**” hedge subtracts a user specified number from the fuzzy result of the evaluation.

```
Hedge: SUBTRACT (A SUBTRACT 0.500000 => A - 0.500000)
```

The “**MULTIPLY**” hedge multiplies the linked evaluation by a user specified number.

```
Hedge: MULTIPLY (A MULTIPLY 2.000000 => A * 2.000000)
```

The “**DIVIDE**” hedge divides the linked evaluation by a user specified number.

```
Hedge: DIVIDE (A DIVIDE 2.000000 => A / 2.000000)
```

The “**POWER**” hedge raises the linked evaluation to the power of four.

```
Hedge: POWER (A POWER 4.000000 => A^4.000000)
```

The “**ALPHA**” hedge sets the linked evaluation to zero if it is less than a threshold fuzzy number specified by the user.

```
Hedge: ALPHA (A ALPHA 0.100000 => IF (A < 0.100000) A = 0)
```

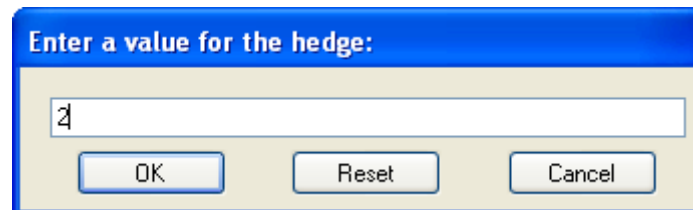
The “**LIMIT**” hedge sets the result of the evaluation to the number if it is greater than the limiting number.

```
Hedge: LIMIT (A LIMIT 0.900000 => IF (A > 0.900000) A = 0.900000)
```

The “**WEIGHT**” hedge gives the linked evaluation a multiplier of two in order to increase its importance in the rule.

```
Hedge: WEIGHT (A WEIGHT 2.000000 => A WEIGHT 2.000000)
```

The ADD, SUBTRACT, MULTIPLY, DIVIDE, POWER, WEIGHT, ALPHA, LIMIT and WEIGHT are user defined hedges. A parameter box appears when these are selected and the user then assigns the hedge value.



Enter a value for the hedge:

2

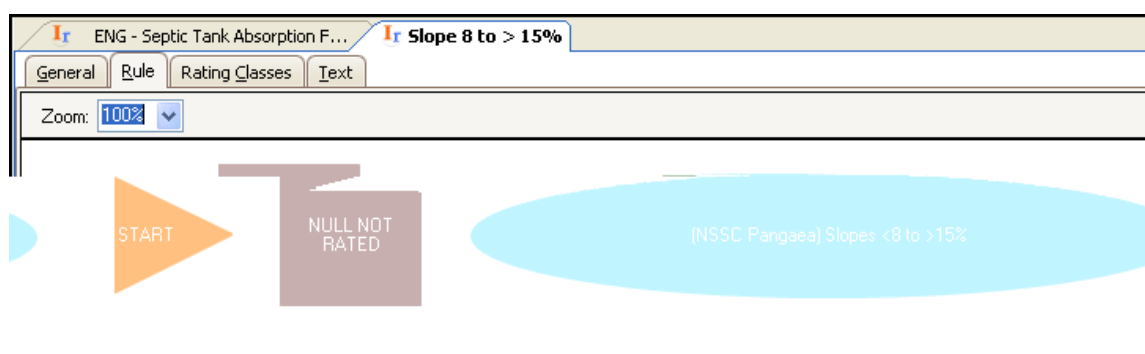
OK Reset Cancel

Rating Classes

Rating classes translate the numerical Membership Value into an adjective class name. Rating classes are assigned to sub rules to identify property limitations. Rating classes are assigned to interpretation rules to identify the interpretation rating class.

Sub Rule rating class

A *Sub Rule* is a logical statement about one limiting feature. Since this sub rule deals with one limiting feature, then the rating class will identify that limiting feature. The Membership Value passed to the sub rule from the evaluation is translated from a numeric to a character class. In this instance, the sub rule receives the membership value from the “Slopes <8 to >15%” evaluation. That number is passed through the rating class and its number is assigned a class.



ENG - Septic Tank Absorption F...			
Slope 8 to > 15%			
General	Rule	Rating Classes	Text
Zoom: 100%			
Rating Class Name		Rating Class Upper Boundary	Rec ID
Too steep		1.00	36
Slope		0.60	38
No slope limitation		0.00	39

In this example, the membership value between 0.00 and 0.60 is converted to the class “No slope limitation”; values greater than 0.60 and less than 1.00 are converted to the class “Slope”; and the value of 1.00 is converted to “Too steep”. These terms are those used to define the restrictive features in an interpretation report.

Each sub rule contains a rating class that translates its membership value to a rating class name for reporting for the interpretation report.

Naming Convention: Rating class names for all rules are to be “Sentence case”. Only the first letter in the first word of the name is capitalized. Rating names for sub rules are to be brief, but descriptive, providing detail to the property limiting feature.

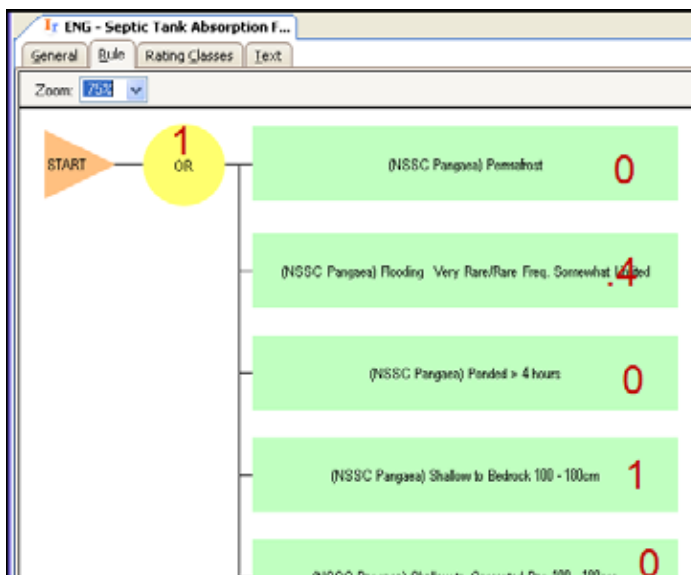
NASIS User Guide

There is a “NULL NOT RATED” hedge in the “Slope 8 to >15%” sub rule. As explained earlier, this hedge will rate the interpretation as “Not Rated” if the slope is not populated. This class assignment is identified as the “Not Rated Phrase:” on the General tab for each sub rule. This assignment is made only if the specific sub rule contains a “NULL NOT RATED” hedge.

The screenshot shows the 'General' tab of a rule editor. The 'Rule Name' is 'Slope 8 to > 15%'. The 'Description' is 'Slope: Steep slopes impede trafficability of heavy machinery and r'. The 'Property used' is 'SLOPE (Modality - low, high, representat'. The 'Restriction limits' are: Limiting > 15%, Somewhat limiting >= 8 and <= 15%, and Not limiting < 8%. The 'Primary Interpretation?' checkbox is unchecked. The 'Rule Design' dropdown is set to 'limitation'. The 'Not Rated Phrase' field is highlighted with a red box and contains the text 'Not rated; Slope'. The 'Ready to use?' checkbox is checked. The 'Rule NASIS Site' is 'NSSC Pangaea', and the 'NASIS Group' is 'Interp/Engineering'. The 'Object Last Updated' is '1/6/2010 9:58:19 AM', the 'Object Last Updated By' is 'Finnell, Paul R.', and the 'Rec ID' is '10192'.

Interpretation rating class

An *Interpretation* or primary rule is the root rule in NASIS. The interpretation uses *Evaluations* and *Sub Rules* to collectively derive interpretive values. The interpretation is a logical statement about land use, limiting features, and the relationship among limiting features. The Interpretation is a collection of sub rules. Each sub rules contains its rating class for identifying the specific property limitation.



The Interpretation collects the information to identify the rating class for the interpretation. The OR operator will accept the maximum membership value from all the sub rules.

That value is then assigned a rating class name based on the classes assigned in the Rating Classes for the Interpretation.

NASIS User Guide

The adjective printed for the Interpretation Rating Class of “1” will be “Very Limited”.

ENG - Septic Tank Absorption F...			
Slope 8 to > 15% Flooding Very Rare/Rare Freq....			
General Rule Rating Classes Text			
	Rating Class Name	Rating Class Upper Boundary ↓	Rec ID
▶ E	Very limited	1.00	90
E	Somewhat limited	0.99	91
E	Not limited	0.00	92

The resulting rating classes appear in the interpretation report as an interpretation rating class and property limiting features.

Sewage Disposal Interpretations				
Reno County, Kansas				
Map symbol and soil name	Pct. of map unit	ENG - Septic Tank Absorption Fields	Rating class and limiting features	Value
2266:				
Tobin	100	Very limited		
		Flooding		1.00
		Slow water movement		0.50
3405:				
Longford, moderately eroded	90	Very limited		
		Slow water movement		1.00
3934:				

Interpretation
Rating Class

Property limiting
feature from sub
rules

Naming Convention:

Rating class names

All rule rating class names are to be “Sentence case”. Only the first letter in the first word of the name is capitalized.

Interpretation Rating Class Names were historically “Slight”, “Moderate” and “Severe”, but later changed in NASIS to “Not limited”, “Somewhat limited” and “Very limited”. Deviations from the norm should be seriously considered before being assigned. All rating names should be as brief as possible.

Rule Names:

Interpretation Names (Sub rules): interpretations are prefixed with discipline abbreviations:

- Ag Waste Management (AWM)
- Agronomy (AGR)
- Forestry (FOR)
- Grazing Land (GRL)
- Recreation (REC)
- Standard Engineering (ENG)
- Urban (URB)
- Waste Management Systems (WMS)
- Water Quality (WAQ)
- Wildlife (WLF)

Special National Interpretations:

- Military (MIL)
- Department of Homeland Security (DHS)

Under no circumstances are these National Interpretations to be copied or modified to create local interpretations by states.

Local Interpretations:

Local interpretations created by states are to be named in order to identify the state. The local interpretation name will be suffixed with a space, followed by an open parentheses, the two letter state code in upper case, followed by a closed parentheses; for example “ENG – Septic Tank Absorption Field (GA)”.

Sub Rule names: a brief name is used to identify the limiting feature.

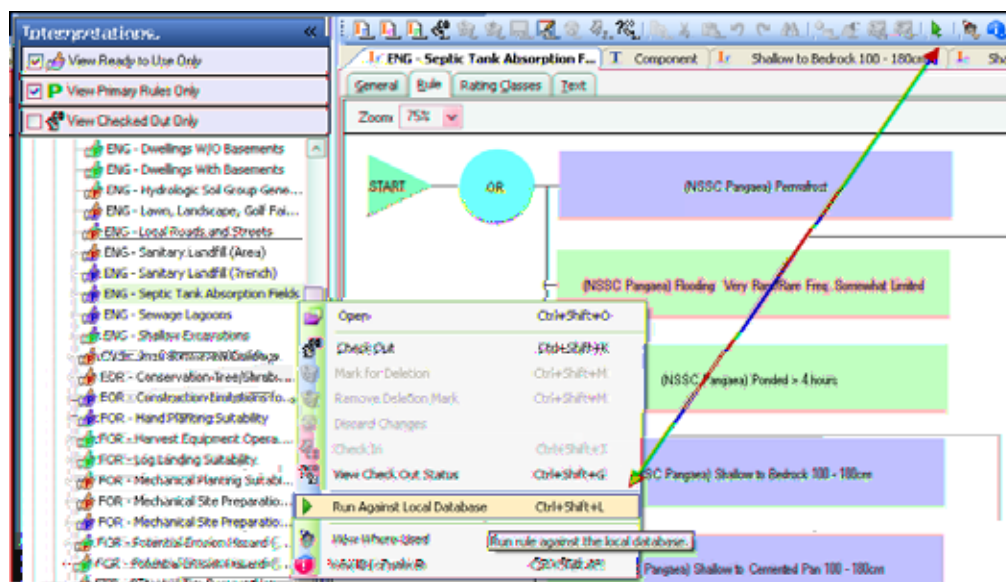
Documentation:

The Interpretation will contain documentation in the Description field under the General tab detailing each sub rule, its evaluations and the properties used in each evaluation. The interpretation documentation will be complete for all sub rules, evaluations and properties used within the Primary Rule.

The sub rule will contain documentation with the details of its specific evaluation(s) and its specific properties. This documentation is written into the Description field under the General tab.

Testing Interpretations

The results of an Interpretation can be tested against a single component using the “Run Against Local Database” option found on the Interpretations Explorer menu or the right click menu.



The resulting report is a detailed report providing the results of all sub rules, all evaluations and all properties associated with the interpretation.

C:\Documents and Settings\All Users\Application Data\USDA\NCEM\SW\Wash6.k\Temp\WashInterpRes - Microsoft Internet Explorer

File Edit View Favorites Tools Help

Address [C:\Program Files\Internet Explorer\iexplore.exe](#)

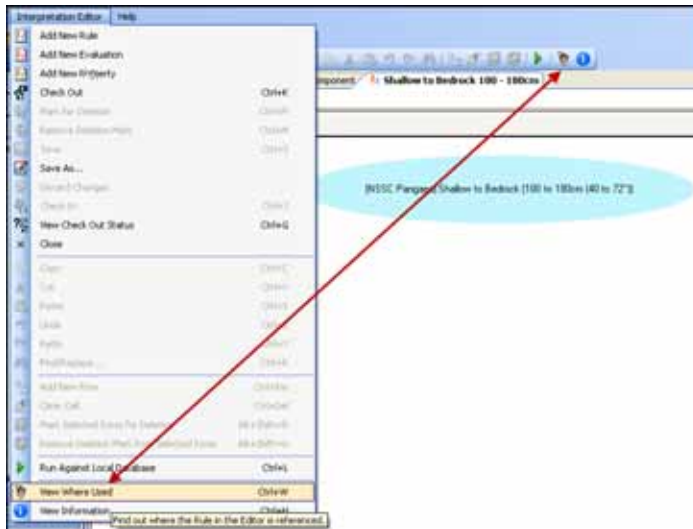
Interpretation: ENG - Septic Tank Absorption Fields

Sub-rule Name	Depth	Low Low Rating	Low RV Rating	High RV Rating	High High Rating	Null Data	Default Data	Inconsistent Data
ENG - Septic Tank Absorption Fields	0	Very limited (1)	Very limited (1)	Very limited (1)	Very limited (1)	false	true	false
Shallow to Bedrock 100 - 180cm	1	Depth to bedrock (1)	Depth to bedrock (1)	Depth to bedrock (1)	Depth to bedrock (1)	false	false	false
Slope 8 to > 15%	1	No slope limitation (0)	Too steep (0.63)	Too steep (0.63)	Too steep (1)	false	false	false
Seepage Bottom Layer, Not Aridic	1	No seepage (0)	No seepage (0)	No seepage (0)	Seepage, bottom layer (1)	false	false	false
Not Aridic	2	Not aridic environment (1)	Not aridic environment (1)	Not aridic environment (1)	Not aridic environment (1)	false	false	false
Permafrost	1	No permafrost depth limitation (0)	No permafrost depth limitation (0)	No permafrost depth limitation (0)	No permafrost depth limitation (0)	false	false	false
Flooding Very Rare/Rare Freq. Somewhat Limited	1	No flooding limitation (0)	No flooding limitation (0)	No flooding limitation (0)	No flooding limitation (0)	false	false	false
Ponded > 4 hours	1	No ponding limitation (0)	No ponding limitation (0)	No ponding limitation (0)	No ponding limitation (0)	false	false	false
Shallow to Cemented Pan 100 - 180cm	1	No cemented pan depth limitation (0)	No cemented pan depth limitation (0)	No cemented pan depth limitation (0)	No cemented pan depth limitation (0)	false	false	false
Wet, Ground Water Near the Surface (120 - 180cm)	1	No wetness depth limitation (0)	No wetness depth limitation (0)	No wetness depth limitation (0)	No wetness depth limitation (0)	false	false	false
Filter Field 60 - 150cm (24-60")	1	No filtering capacity limitation (0)	No filtering capacity limitation (0)	No filtering capacity limitation (0)	No filtering capacity limitation (0)	false	false	false
Percolation 60 - 180cm (24-72")	1	Ksat not restrictive (0)	Ksat not restrictive (0)	Ksat not restrictive (0)	Ksat not restrictive (0)	false	false	false
Total Subsidence > 60cm (24")	1	No subsidence limitation (0)	No subsidence limitation (0)	No subsidence limitation (0)	No subsidence limitation (0)	false	false	false
Large Stones - Fract. > 3in, 24.9 to >50%, Wght. Av. 0-40	1	No large stone limitation (0)	No large stone limitation (0)	No large stone limitation (0)	No large stone limitation (0)	false	false	false
		Not convertible	Not convertible	Not convertible	Not convertible			

Done My Computer

Where Used “Rules”

Rules are developed to be used by more than one Rule. The “Where Used” icon or menu option is used to identify rules using a specific evaluation. This allows the user to identify the impact to other evaluations and rules when changes are made to the specific rule. Highlight the rule in the Interpretation Explorer, or with the Rule open in the Editor Panel, choose “Where Used” icon or menu option.



Where Used for Rule Shallow to Bedrock 100 - 180cm

Evaluations Used in This Rule

Evaluation Name	Evaluation Site
Shallow to Bedrock (100 to 180cm (40 to 72"))	NSSC Pangaea

Rules Using This Rule

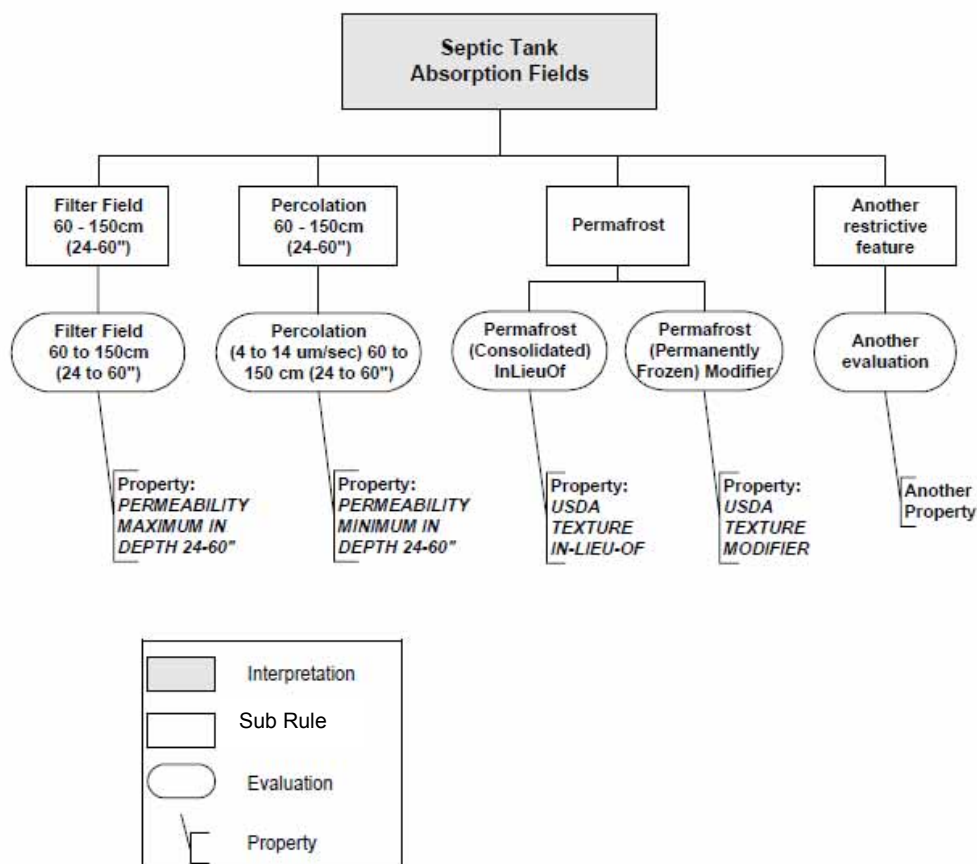
Rule Name	Rule Site
BOBSeptic Tank Absorption Fields	MLRA11_Office
dark: ENG - Septic Tank Absorption Fields (std copy)	MLRA17_Office
ENG - (Test) Septic Tank Absorption Field with weighting	NSSC Data
ENG - IA-Septic Tank Absorption Fields	MLRA10_Office
ENG - NC Septic Tank Absorption Fields	MLRA14_Office
ENG - Septic Tank (PI)	MLRA02_Office
ENG - Septic Tank Absorption Fields	NSSC Pangaea
ENG - Septic Tank Absorption Fields (DE)	MLRA13_Office
ENG - Septic Tank Absorption Fields (MD)	MLRA13_Office
ENG - Septic Tank Absorption Fields (OH)	MLRA11_Office
ENG - Septic Tank Absorption Fields (TN)	MLRA16_Office
ENG - Septic Tanks (PI) test	MLRA02_Office
ENG_MO15: SEPTIC TANK ABSORPTION FIELDS	MLRA15_Office
IA - ENG - Septic Tank Absorption Fields	MLRA10_Office
mo15 - Septic Tank Absorption Fields	MLRA15_Office
MO18 ENG - Septic Tank Absorption Fields	MLRA18_Office
MO18 TN - Septic Tank Absorption Fields	MLRA18_Office
NC Check - ENG - Septic Tank Absorption Fields	MLRA14_Office

Ownership of interpretations, rules, evaluations, and properties

Rules, subrules, evaluations, and properties are owned objects in NASIS. They are data and have ownership associated with them, as do queries and reports and any other NASIS object. Therefore, they can be copied, reviewed, or linked to any rule, subrule, evaluation, or property. Since they have ownership, they can only be edited by members of the group that owns the data. Whether using locally or nationally created interpretive criteria, choose an interpretive report and run it, the soils data in the selected set is applied to the criteria to derive interpretation results.

Summary

The figure below illustrates that sub rules focus on one limiting feature and must link to at least one evaluation. Sub Rules say nothing about the land use. Therefore, they can be used in different interpretations. Sub Rules are aggregated into an interpretation and are considered the basis, or building blocks, of an interpretation. An evaluation is the relationship between a soil property's value and its relative truthfulness of being a limiting feature.



Relationships Among Interpretive Criteria

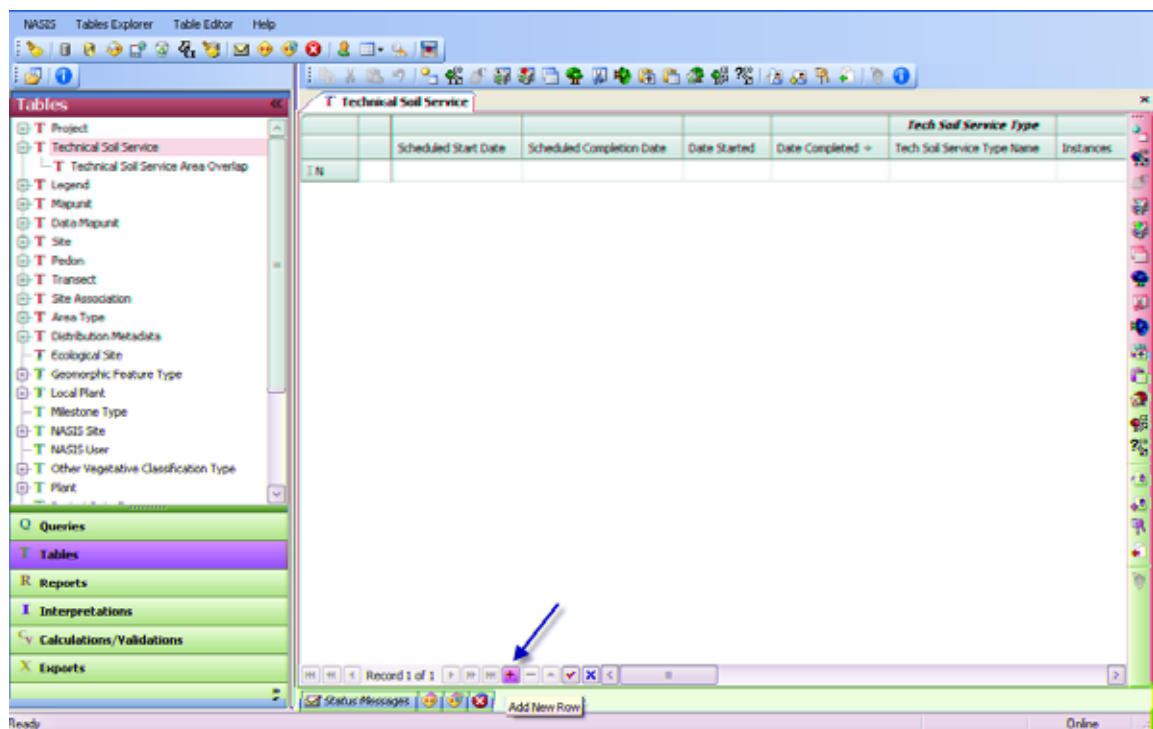
Chapter 22: Technical Soil Services Reporting

The Technical Soil Services Object is a new object used to report technical soil service operations. The objective is to explain how the Technical Soil Services Object is populated and managed for Technical Soil Services (TSS).

Populate the Local Database with TSS data

Initially, no data exists in the Technical Soil Services Object. Data is populated into this object using the user interface. The data is then stored in the NASIS local database and uploaded to the national database.

1. From the Tables Explorer, open the “Technical Soil Service” table into the Editor panel.
2. From the Editor panel tool bar or the Table Editor menu, “Add a New Row” to the table.



3. Begin by populating the scheduled dates for the activity and the dates the activity was actually started and completed.

4. Identify the “Type” of Technical Soil Service provided from the choice list:

Tech Soil Service Type Name	
▶	Conservation plan resource inventory
	Create custom maps, reports, data files, etc.
	Develop or validate interpretations
	Maintain or update eFOTG
	On-site investigation, nutrient management
	On-site investigation, other(non-soil survey)
	On-site investigation, wetland appeal
	On-site investigation, wetland determination or delineation
	Provide training to NRCS and partners
	Public information articles, pamphlets, booklets, etc.
	Soil judging contests, envirothons, etc.
	Teaching, lectures, presentation, displays, posters
	Technical consultation
...	

5. After the Type is identified then the number of instances, the NASIS user entering the data and the Recipient (choice list) is selected.

T Technical Soil Service						
			Provider			
		Instances	NASIS User Name	Recipient	Plans Affected	Program Benefitted
IN				▼		

Name ↑

- conservation district
- county, city or local agency
- district cooperators or program recipient
- nracs area or field office
- nracs national
- nracs region
- nracs statewide
- other farm individuals, groups, or organizations
- other federal agency
- other non-farm group or organization
- private consultants
- schools or educators
- state agency

✕

6. The number of plans affected are identified and then the Program Benefitted (choice list) is chosen:

The screenshot shows the 'Technical Soil Service' form. The 'Program Benefitted' dropdown menu is open, displaying a list of programs. The list includes: all programs, cppl, crp, csp, cti, eqip, ewp, fppa, frpp, grp, gswp, hfrp, nri, rc&d, rwa, whip, wp&fpp, and wrp. The dropdown menu has a red 'X' button at the bottom left and a scroll bar on the right.

Recipient	Plans Affected	Program Benefitted	Acres Benefitted	People Served
IN				

7. The Acres Benefitted and the People Served are recorded.
8. The Outcome (choice list) is identified. The Impact field allows the user to write notes pertaining to the reportable item.

The screenshot shows the 'Technical Soil Service' form. The 'Outcome' dropdown menu is open, displaying a list of outcomes. The list includes: elevated people's knowledge of soils, influenced external entity's decisions or policy, influenced nracs policy, influenced or created nracs technical materials, and more science based land use decision. The dropdown menu has a red 'X' button at the bottom left and a scroll bar on the right.

Outcome	Impact	Lat. Degrees	Lat. Minutes

9. The location columns allow the user to identify the Latitude and Longitude coordinates:

T Technical Soil Service									
		Lat. Degrees	Lat. Minutes	Lat. Seconds	Lat. Direction	Long. Degrees	Long. Minutes	Long. Seco...	Long. Direc...

10. Or the UTM coordinates:

T Technical Soil Service				
		Datum Name	UTM Zone	UTM Northing
				UTM Easting

Choice lists can be expanded by sending a request to the Hot Line staff providing the new choice list item and reasoning for its inclusion.

Technical Soil Service Area Overlap

The child table, "Technical Soil Service Area Overlap" defines the area that the provider chooses to assign to the specific TSS location.

T Technical Soil Service									
						Tech Soil Service Type			Provide
		Scheduled Start Date	Scheduled Completion Date	Date Started	Date Completed	Tech Soil Service Type Name		Instances	NASIS User N
▶ N	⊖	10/01/2009	09/30/2010	09/01/2010	09/07/2010	On-site investigation, wetland determination or delineation		1	Finnell, Paul R.
		Technical Soil Service Area Overlap							
		Area						Record Last Upda...	
		Seq	Area Type NASIS Site Name	Area Type Name	Area Symbol	Area Name	Record Last Updated	NASIS User Name	Rec ID
▶ N			NSSC Pangaea	County or Parish	KS169	Saline	01/04/2010 14:11:35	Finnell, Paul R.	10032

Technical Soil Service Area Query

One query exists on the NSSC Pangaea site named "Technical Soil Services by Provider". This query will load all TSS instances populated by a given provider. Others may be created as this project becomes more populated.